My Linux Mint 18.2 ‘Sonya’ Cinnamon set up for daily use

PLEASE READ CAREFULLY BEFORE PROCEEDING: I, Charles Phillip McDougall of Theodore, Qld, Australia, make available this eBook free of charge to anyone, the use of which must be on the clear understanding that there shall be no liability whatsoever to either myself or to my family or to anyone else at any time. If you proceed in any way with the information contained herein, it shall be completely at your own risk. The original purpose of this eBook was to make the re-installation of Linux Mint faster and simpler, should I have needed to do so, but its' added purpose now is to share it with others. As this is **not** an in-depth document, it may, however, satisfy the curiosity of some newcomers to Linux Mint. Please study Linux Mint's User Guide in the PDF format, available on the ‘***Linux Mint 18.2 Sonya Welcome Screen***', under ‘Documentation’, before proceeding further.

INTRODUCTION:
The cost of upgrading commercial operating systems and their software suggested it was time to consider other alternatives. As there was no shortage of Linux Systems available, and as most of them were free together with most of their software, it seemed as good a place to start as any. After testing a number of these systems, as well as viewing the opinions of numerous persons on the Internet about them, the decision was arrived at to go with Linux Mint 17 Cinnamon. At a later date **Linux Mint 18.2 ‘Sonya’ Cinnamon** was installed in 64-bit, and it was as user friendly as the previous versions. Linux Mint has proved to be an outstanding operating system. Nevertheless, as in all things, the users must make up their own minds. This eBook has been designed with the beginner in mind, and has included as many questions and answers as time has allowed.

ACKNOWLEDGEMENTS:
I dedicate this book to ‘my wife and best friend Jenny’, who showed remarkable patience and support during the time in which it was being written.

Appreciation is also extended to the many experts and experimenters of the Linux Mint system who posted their ideas on the Internet free of charge, which contributed greatly to this book.

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We previously installed 'Linux Mint 18.2 Sonya Cinnamon 32-bit' on a small 'Dell 780 3x4 Desktop' computer, but have since installed the 64-bit version on it instead. In both instances, the OS worked well, and ran ran quite fast, including Windows XP, which was installed on the same computer within VirtualBox, in a secure partition using Robolinux. Before we install the 64-bit version of Linux Mint, we must first check if the computer's processor (CPU) is 64-bit compatible. How to do so appears next.

IS MY COMPUTER'S PROCESSOR 32-BIT OR 64-BIT: There is freeware available from www.igorware.com/64bit-checker named **64bit-checker.exe**, and is about 84kb in size. It was designed for Windows systems, but also works in some Linux systems, as long as WINE is installed. With it, a computer's CPU can be checked to see if it is either 32-bit or 64-bit. As the 32-bit Firefox Web Browser may be discontinued in due course, it would be best to install the 64-bit

version of Linux Mint whenever possible.

If working from within Linux Mint, the cpu's bit-rate can be determined by entering either **lscpu** or **sudo dmidecode -t processor** into the Terminal, then entering our computer's bootup Password.

SYSTEMD: Linux Mint 18.2 Cinnamon is based on 'Ubuntu 16.04, which uses **Systemd**'. A number of other Linux Systems have also opted to go with Systemd. Some previous versions of Mint, e.g. v17.3 and backwards, used the 'SysV init' system, which initialized the system, and loaded the correct drivers upon system boot, etc. A web search will show the tasks performed by these systems.

END OF SUPPORT: When 'End of Support' is reached, we will no longer receive updates for security issues on our installed software, whether it be for the OS or the installed programs. This includes the Web Browser/s, which is/are essential for Online Banking (see USING A LIVE CD FOR SAFER BROWSING near the end of this manual). As Linux Mint 18.2 is supported until 2021, we will receive updates for any security issues until then, which means we will not need to upgrade each six months or so, if we do not wish to. However, when we reach Linux Mint 19, it may be best to reinstall.

CHROME APPS MAY SOON BE UNAVAILABLE: There are two types of Chrome apps. The first is '**packaged apps**', and the second is '**hosted apps**'. About 1% of Windows, MacOS and Linux users use Chrome's 'packaged apps', and as 'hosted apps' are already implemented as regular web apps, then support may be removed from the three computer types mentioned above, in due course. This means that support for finding, installing and then opening the apps from the Chrome Web Store may be lost to Windows, macOS and Linux systems, unless unforseen changes occur. Their eventual aim is to work in the Cloud, and not to rely on installed apps. So be prepared for the possible loss of Google's Chrome Apps.

DOES LINUX SUIT EVERYONE: The answer is no. Though Linux is very easy to navigate once we learn how, it still takes time to gain that knowledge. In our case, it has done everything we had previously done on a commercial system for the past fifteen years, except scan documents, but that has now changed. There is more on scanners further on. However, some things are faster and some things are slower, as would be expected.

For those wishing to try Linux, it may be best not to dual-boot it with commercial operating systems so as to avoid conflicts, but rather to run it on another computer as a single install. This will allow time to get used to it, and to decide whether or not to keep it. The software is free to date (except for any software external to Linux Mint), and so far, our computers have not been troubled by viruses. With a few or more clicks, any software that requires updating can usually be updated.

SHOULD WE PURCHASE AN INSTALLATION DVD: It can sometimes be best to purchase an installation DVD with Linux Mint already burnt to it. This saves us from having to confirm that the ISO we freely downloaded has not been tampered with, and that its' transfer to DVD is also completed without errors. Should we prefer to purchase Linux Mint 18.2 already installed on DVD, then one website to purchase it from is **OSDisc.com**.

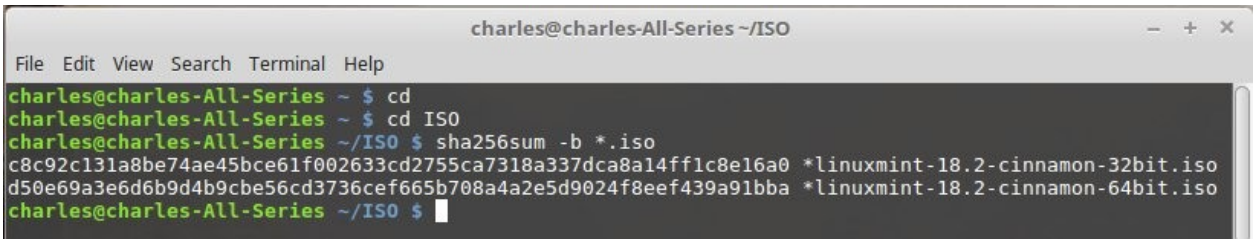
THE LINUX MINT 18.2 ISO: If we prefer to create our own DVD, then the ISO in either 32-bit or 64-bit can be downloaded from the Linux Mint Homepage. This can later be burnt to DVD as an active ISO, which should be done after making the usual checks. The download page for the ISO is: **https://linuxmint.com/download_all.php**.

VERIFYING THE SHA256SUM OF THE DOWNLOADED ISO: (This is done before burning it to a DVD). After downloading the ISO (from the recommended site), copy and paste it to the Desktop or the Home Folder, as this can make it easier to check. Right-click on the ISO, then click on '**Check SHA256**' from the drop-box. After a while a tiny box with a mixed set of 64 letters and numbers appears. This is the sha256sum. If this sha256sum is different to the matching one listed below, then delete that downloaded ISO, as it has either been interfered with, or it was corrupted during download. If the sha256sum is correct, the ISO can then be burnt to DVD, after which the DVD can be checked for errors. How to do this can be seen a little further on under '**Performing the integrity check on the DVD**'.

Another way to verify the ISO images:
1. Create a folder within the 'Home' folder, then name the newly created folder '**ISO**'.
2. Paste the downloaded ISO/s to be verified into the new ISO folder located in the Home directory.
3. Go to **https://linuxmint.com/verify.php**, and click on the version to be checked. In this case it is '18.2'. Next click on 'sha256sumtxt' to access its' txt file, then copy and paste this txt file to the 'ISO' folder or elsewhere for comparison purposes. We can also click on 'sha256sum.txt.gpg' to access its' txt file for comparison, if we wish.
4. Next copy and paste the following three lines into the 'Terminal' one-by-one, or all at once:

cd
cd ISO
sha256sum -b *.iso

Click 'Enter' once, then wait for the sha256SUM reading/s, as it may takes a short while.



In our case we copied and pasted two Linux Mint 18.2 Cinnamon ISO's (32-bit and 64-bit) to the 'ISO' Folder in move '2' above. The Terminal data corresponded to the data available from the above web Page, together with both of the sha256sum.txt readings listed below.

sha256sum.txt for 32-bit ISO:
c8c92c131a8be74ae45bce61f002633cd2755ca7318a337dca8a14ff1c8e16a0 ***linuxmint-18.2-cinnamon-32bit.iso**

sha256sum.txt for 64-bit ISO:
d50e69a3e6d6b9d4b9cbe56cd3736cef665b708a4a2e5d9024f8eef439a91bba ***linuxmint-18.2-cinnamon-64bit.iso**

The above information is also available at **blog.linuxmint.com/?p=3289**. Once on that page, scan down to the end of the listed countries, then click on 'sha256sum.txt' to access it. Then do the same for 'sha256sum.txt.gpg' to get its' data (Pgp stands for 'Pretty Good Privacy', and gpg stands for 'GNU Privacy Guard').

BURNING THE DOWNLOADED ISO IMAGE TO DVD:
If the **sha256sum** is correct, the ISO file can then be burnt to DVD using an ISO burner on either a Linux or a Windows OS. Do not use a burner that simply copies files, as it must be able to burn

active ISO's. The first time I used 'Free ISO Burner Portable' on our Windows OS (as we had Windows then), though InfraRecorder was recommended for Windows. If burning the image in Linux Mint, insert the blank DVD and cancel the pop-up box. Right-click on the previously downloaded ISO, click 'Open With', and select 'Brasero' (recommended) or '**Xfburn**'. If using Xfburn, then, after the 'Burn image' box opens, select '4' speed as the burning rate (slow), and 'Auto' as the 'Write Mode'. Under 'Options', select 'Eject disk' and 'BurnFree' by clicking an 'x' beside them. Now click 'Burn Image'. The ISO image will then be burnt to the DVD as an **Active** ISO Image.

PERFORMING THE INTEGRITY CHECK ON THE DVD: This is performed after the live DVD has been created to confirm that the DVD is OK. To begin: Start the computer, insert the live DVD, then turn the computer off. **Alternatively, carefully push a straightened paper clip into the tiny hole at the front of the CD/DVD player while the computer is turned off, so as to open the DVD Drive, so we can insert the DVD**. Next click the computer's 'Start' button then rapidly press, e.g., F12, until the option to boot from the DVD appears, then select that option. The 'Welcome to Linux Mint 18 Cinnamon' screen appears. It has five options. They are: **1** Start Linux Mint. **2** Start in compatibility mode. **3** Integrity check. **4** Memory test. **5** Boot from local drive. Click on '**Integrity check**' to highlight it, then press 'Enter' on the keyboard. The following message soon appears: 'Checking integrity, this may take some time'. Further checks appear, the slowest of which is 'Checking./casper/filesystem.squashfs'. When the slow check completes, a few rapid checks complete, after which the following message appears if all is OK: '**Check finished: no errors found**'. A further message says 'Press any key to reboot your system'. As the system restarts, remove the DVD. If the DVD is OK, it can be used to install Linux Mint on the computer of our choice.

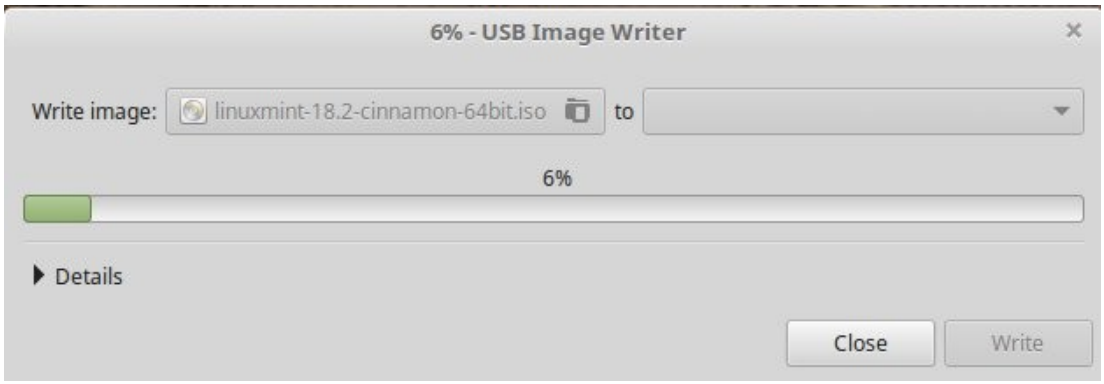
BURNING THE LINUX MINT 18.2 ISO TO A USB STICK:

1. We can start by downloading the ISO image that we want to burn to a USB stick (if we don't already have the ISO downloaded). In this case it is 'Linux Mint 18.2 Cinnamon 64-bit Sonya'. Read '**THE LINUX MINT 18.2 ISO**:' in this manual.
2. Connect a USB USB stick to the computer, then close it when it opens. (The USB stick should be freshly formatted in FAT32).
3. Open the '**USB Image Writer**' program. It comes pre-installed:

4. Click the black '**dot**' in the 'Write image:' window. The 'Select Image' box appears.
5. Navigate to the **ISO**. If it it on the Desktop, then click '**Desktop**' in the left section of the new window. The Desktop items now appear in the right section.
6. Click on the correct **ISO** to highlight it, then click '**Open**', located at the bottom-right of the new window. The new box disappears, and'linuxmint-18.2-cinnamon-64bit.iso' now appears in the 'Write image:' window.
7. When we click the down arrow in the '**to**' window, the details of our USB stick appear there,

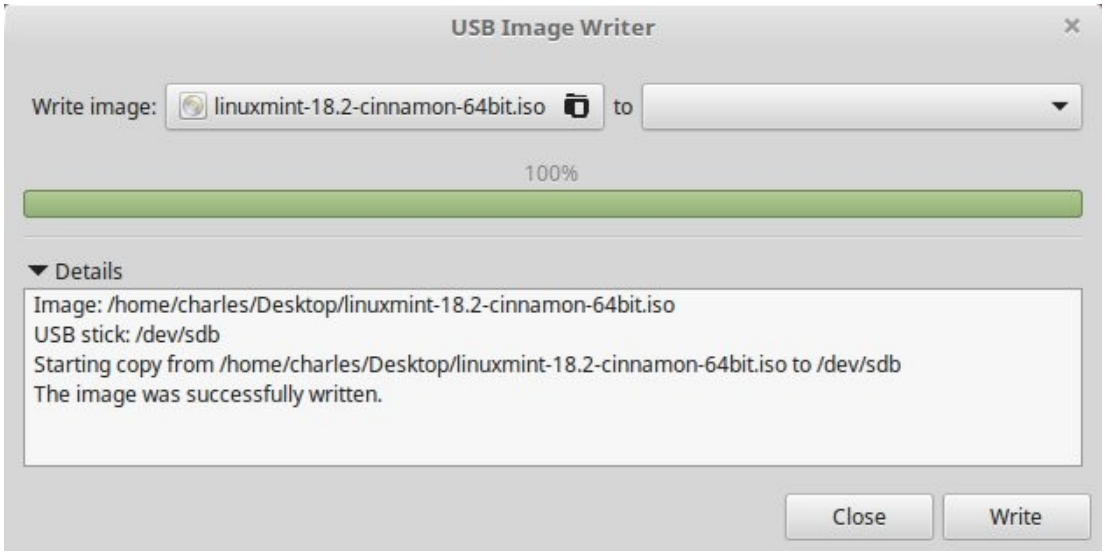
and are highlighted. In our case the USB stick description of our particular USB drive was 'FLASH Drive SK_USB20 (/dev/sdb) – 8GB' (we only required a 2GB USB stick).

8. When we click in the '**to**' window, the highlighting will disappear, but the print will remain.
9. Click '**Write**'. The following box appears:



10. When the Linux Mint ISO finishes burning to the USB stick, the ISO image becomes an 'Active ISO Image', and the following box then appears:

11. Click '**OK**'. We now return to the 'USB Image Writer' box.
12. When we clicked on '**Details**' near the bottom left of the box, the following appeared:



13. Cancel out of the box by clicking on '**Close**', right-click on the USB stick's Desktop icon, then click 'Eject'. Now remove the USB stick.
14. The size of the ISO located, e.g. on the Desktop was 1.7GB, and the size of the Active ISO

Image on the USB stick was 1.7GB, and was made up of 419 items.

CAN WE DUAL BOOT WINDOWS AND LINUX MINT: Yes, but I chose **not** to dual-boot, as a matter of personal choice. You might do otherwise. As Linux and Windows operating systems use different file systems, e.g., **ntfs** for Windows and **ext4**, etc for Linux, conflicts can result. Linux is often removed when installed beside Windows as dual-boot. On the other hand, many have dual-boot on their computers without any problems. For those who have a spare computer in the cupboard, it might be useful to install Linux Mint on it to see if it is suitable for one's needs.

Most computers with a Windows 8 logo sticker on them have Secure Boot enabled by default. This means it may have to be disabled, if deciding to dual boot Linux Mint with Windows 8. This does not apply if we install Linux Mint as the only system on the computer. Now, having said that, some have installed both systems and run them successfully in dual boot, without disabling Secure Boot.

CAN WE CHECK OUT LINUX MINT BEFORE INSTALLING IT: Yes, we can. First connect the Internet lead to the computer in case we decide to install it after checking it out. Now turn on the computer, insert the Linux Mint 18.2 DVD, and then turn off the computer. Next press the computer's start button, and immediately press F12 on the keyboard fast and often until the option to boot from the DVD appears (in some cases F12 should not be pressed until the first flicker of light appears on the screen). Select that boot option, then follow the prompts. After a while the Linux Mint Desktop appears, and we can then navigate through it to see if it suits us. If it does, then the already connected **Internet cable** will allow for file updating whilst installing. If installing, read whether or not to select an important option. **Continued next**:

AN OPTION WHILST INSTALLING LINUX MINT 18.2:
Continued: If we decide to install Linux Mint after navigating through it, then double click the round DVD icon on the previously mentioned screen to start the installation process. The 'Welcome (English)' screen appears. Click 'Next'. The 'Preparing to install Linux Mint' screen appears. We can include an important option by clicking in the tiny box beside '**Install third-party software for graphics and Wi-Fi hardware, Flash, MP3, and other media. This software is subject to License terms included with it's documentation. Some is Proprietary**'. This inclusion will enable us to play mp3's as well as some other file types straight up, and is available for those who do not want proprietary software on their computers. After installing both ways, it was found that some software did not work if that option was not included. From this point on, follow the prompts. If we choose not to select this option, then it can be installed after Linux Mint is installed and updated. How to include it afterwards is shown under the heading '**How to install Media Codecs after installation**', listed a bit further on. It may be best for each to do their own search on whether or not to include the codecs.

RESTART THE COMPUTER AFTER INSTALLATION: The first thing to do after installing Linux Mint 18.2 is to restart the computer.

RUN THE 'UPDATE MANAGER' AFTER RESTARTING: Now that the computer has been restarted, it is time to update the system. **Before proceeding, read the orange section below**. Updating the system is a simple process as follows: Click on the tiny shield on the panel, located on the bottom-right-side of the Desktop. When the Update Manager screen appears, click 'Install Updates' at the top of that screen, enter the password (the password is the same as the one we chose whilst installing the system), and then press 'Enter. This first updating can take quite a while. Once the updating is completed, the computer should be restarted once again **to apply the updates**.

Each day keep an eye on the tiny Update Manager shield on the bottom Panel. Whilever a 'tick' is visible within the shield, then no updating is required. If an 'l' or something else appears within the

shield, then updating is usually required. If an update does not install straight off, then try again later, as the site might be busy.

In the 'Level' section of the ‘Update Manager’ screen, we can view the safety levels of any updates that may be ready to be installed. Levels 1+2 have been tested by the Linux Team, and are safe. Level 3 is considered stable and safe, but may not have been tested yet by the Linux Team. Levels 4+5 may be unstable and risky, so are usually not marked for installation by default. Linux Mint 18-18.2 are based on Ubuntu 16.04, and Ubuntu has been said to install all of their updates by default. To get more on this, go to 'How-To Geek' and see what they say. It is worth reading: **http://www.howtogeek.com/**. Once the How To Geek website opens, click on 'Search' near the top right side of that page, and then type the following into the window: ‘Ubuntu Developers Say Linux Mint is Insecure. Are They Right?' Either way, some say there are few problems, or, put another way, there can be problems no matter which way we go. I used to install all ‘4’ and ‘5’ level updates, leaving out the ones that looked risky, and have never had any problems doing this. However, I now only install levels 1 to 3 updates. The only way a virus can infect a Linux Mint OS is by giving permission for them (viruses) to install on the system, so be careful, not only here, but during other actions also.

It may be best to do the following: Open the Update Manager, click on ‘**Edit**’ located at the top of the page, then click on ‘**Update policy**’ from the drop-box. Now click a dot beside ‘Don’t break my computer’, or ‘optomize my security’, then click ‘**OK**’. We use the second choice.

Instead of using the Update Manager, we can paste '**sudo apt-get update'** into the the Terminal to update the system, though for every day updating it is **not** recommended to go this way. The use of sudo should be limited to where it is required.

AT THIS STAGE, WHAT RUNS AND WHAT DOES NOT:
1. DjVu’s **display** straight up, and are run by Xreader (Document Viewer).
2. Emails do **not** work yet. Install Sylpheed.
3.ePub’s do **not** work yet. Install e-Book Viewer. It may install with Calibre.
4. flv’s **display** straight up and are run by Xplayer (Media Player).
5. html’s **display** straight up, and are run by Firefox Web Browser.
6. jpg’s **display** straight up, and are run by Xviewer (Image Viewer).
7. M.S. Word documents **display** straight up in LibreOffice Writer.
8. Mhtml’s do **not** display straight up. Install QupZilla.
9. Mobipocket’s do **not** work yet. Install Ebook-Viewer. Also ‘FBReader' (e.g. ‘E-book Reader’).
10. mp3’s **display** straight up and are run by Xplayer (Media Player).
11. pdf’s **display** straight up, and are run by Xreader (Document Viewer).
12. Text’s from a Windows computer **display** straight up, and are run by Xed.
13. mp4’s **display** straight up and are run by Xplayer (Media Player).

HOW TO INSTALL MEDIA CODECS AFTER INSTALLATION: Continued from a previous heading, e.g. ‘An option whilst installing Linux Mint 18.2’: If we did not choose that option whilst we were installing Linux Mint 18.2, then we can install some of the multimedia codecs now as follows: Paste **sudo apt-get install mint-meta-codecs** into the Terminal, then follow the prompts.

SECURITY SOFTWARE: Now that we have installed and updated Linux Mint, it is time to install some security software. The security software information appears further on in this document under the following headings: ‘**Firewall**’, ‘**Do we need Antivirus or Rootkit Removers**’, ‘**Antivirus**’, ‘**ChkRootKit**’, ‘**RKHunter**’, and ‘**Nemiver**’. We may or may not wish to apply the Firewall rules listed there (e.g. the sudo ufw deny/allow rules listed under ‘Firewall’), though we chose to do so. However, it is best to activate the firewall. As Linux Mint has no central registry

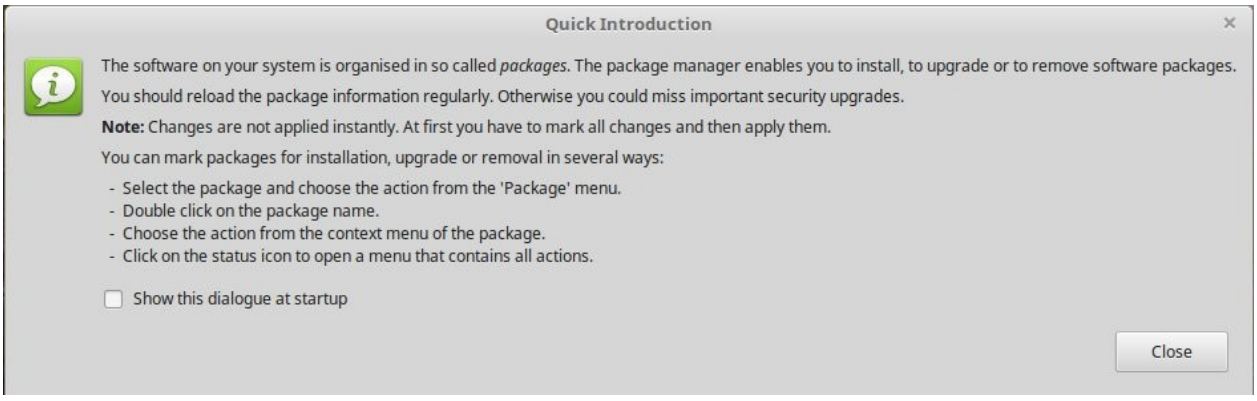
(though it does have a registry made up of simple text files), it seems to run more free of problems than computers with commercial Operating Systems. It is nevertheless wise to install an Antivirus and Firewall at least, not only for its own security, but also to avoid infecting other peoples computers (with non-Linux OS's) whilst sending emails. The other side to this is that some people have run Linux Mint with no Firewall or Anti-virus installed for years, and say they have never had any problems, though this is risky to themselves and others.

Before malware can run in Linux Systems, we must first give them 'root' permission to install on the system. So be careful not to carelessly install anything and everything. If we are very careful, it could be said that an AntiVirus may not be necessary, but it pays to be safe.

'UPDATE MANAGER' ERROR MESSAGES:
When Google Chrome stopped support for all 32-bit systems in March of 2016, we uninstalled it from our computer. After removing it, and whilst updating the system afterwards using the Update Manager, the following error message appeared: ***"Could not refresh the list of updates. W:failed to fetch* http://dl.google.com/linux/chrome/*deb/dists/stable/Release. Unable to find expected entry 'main/binary-i386/Packages' in Release file. (Wrong sources.list entry or malformed file). Some index files failed to download. They have been ignored, or old ones used instead"***.

There are different ways to uninstall software. It can be done using the 'Software Manager' etc. As for Google Chrome, the correct way to have uninstalled it was with the 'Synaptic Package Manager', as it would have left no traces. It was the traces that left the 'error' message listed above. These 'traces' were later removed using the above mentioned SPM, which in turn removed any 'error' messages.

SYNAPTIC PACKAGE MANAGER:
When SPM was opened the first time, the 'Quick Introduction' box appeared. It said:



To uninstall, e.g. Google Chrome from the computer:
1. Open the 'Synaptic Package Manager'.
2. Click the 'Search' Icon near the middle top.
3. Type, e.g. 'Google Chrome' into the 'Search' window, then click 'Search'.
4. Right click on 'google-chrome-stable', then click on 'Mark for complete removal'.
5. Click 'Apply' near the top left. Now follow the prompts.

Use this uninstall method when a similar message appears: "Could not refresh the list of updates. W:failed to fetch…" as previously mentioned.

PACKAGES:
In August of 2017, the free packages available for Linux Mint 18.2 64-bit Cinnamon were quoted to number about 85,000, and there were considerably less for the 32-bit system. Anyway, our software

choices are made up of packages, so whenever we download software from the Software Manager, we are downloading packages. It usually takes more than one package to install a program, so packages can then be shared between other programs, thus reducing the total amount of disk space used.

The Software Manager can be accessed by clicking ‘Menu’ (bottom left), then clicking ‘Software Manager’ (second on the top-left-side in the pop-up). Next enter the password in the following pop-up, then click ‘Enter’. The Software Manager shortly appears with its’ various categories of software listed in twelve software boxes. We can then search for and then install our choice of software to install.

EXTERNAL SPEAKERS: We might have to make some adjustments to the Sound settings. To do so, click 'Menu', then 'Preferences', and then 'Sound'. Click on the listing of choice to set the speaker volume. The ‘Sound’ window can also be accessed by clicking on the speaker Icon on the Panel at the bottom right-side, then clicking on ‘Sound Settings’. Also check that the volume control on the plug-in speakers is set neither too low nor too high to suit our particular computer.

INSTALLING THE NEXT UPGRADE WHEN AVAILABLE: It is best not to attempt to upgrade from Linux Mint 17.3 to Linux Mint 18, etc, as the code base for the 18 series is Ubuntu 16.04. However, if upgrading, do so within the same series. That is, upgrading from Linux Mint 18 to 18.1, and then to 18.2 is usually OK, but not always, as things can still go wrong.

The usual way to upgrade is to open the **Update Manager** (the tiny shield on the right-side of the panel at the bottom), click '**edit**' at the top of the Update Manager window, then click, e.g., **Upgrade to “Linux Mint 18.2 Sonya”**, if an upgrade is available (it is available). If it is not available, then that option will not appear. There is a difference between an update and an upgrade. An upgrade overwrites the existing system, so we might lose some system settings. Should this happen, we can usually reset them. We have upgraded a few times, from, e.g., 17 to 17.1, 17.1 to 17.2, and 17.2 to 17.3, without any mishaps. When we came to Linux Mint 18, we simply installed it from scratch. We upgraded from Linux Mint 18.1 to 18.2 without any mishaps, though there were certain things to avoid. It is to be remembered that a fresh install is quite simple, if we keep a list of what programs we would like included. Some people have a second computer to use if necessary, while the first one is being redone. Anyway, Linux Mint 18 to 18.2 are supported till 2021.

If choosing the upgrade method from 18.1 to 18.2, it is best we do our own research.

WALLPAPER: Each version of Linux Mint has its own wallpaper. So, when ready, we can select the pre-installed Desktop Wallpaper, by clicking on 'Menu', 'Preferences', then 'Backgrounds'. To get all Linux Mint’s wallpaper, paste **sudo apt-get install mint-backgrounds-*** into the Terminal, click 'Enter', then follow the prompts. This will make available the wallpaper that came with Maya, Nadia, Olivia, Petra, Qiana, Rafaela, Rebecca, Rosa, Sarah, Serena, Sonya, as well as the Retro jpg’s. If we have upgraded from, e.g., 18.1 to 18.2, then we may not get the 18.2 ‘Sonya’ wallpaper.

The ‘Backgrounds’ folder is located as follows: Double click the ‘Computer’ folder, located at the top left side of the Desktop screen. Then navigate to **File System/usr/share/backgrounds**. However, take care, as one should not tamper with the File System.

The easy way to select the wallpaper of our choice is as follows: Right-click on a free space on the Desktop, click ‘Change Desktop Background’, then click once on each of the twelve Folders mentioned above to find the jpg we want. Left click once on the image to set it as our preferred desktop. We can do this whenever we want a change.

If we have our a folder with our own jpg's, we can navigate to that folder, right click on the wallpaper of our choice, then left click on 'Set as Wallpaper' from the drop-box. Alternatively, we can copy and paste our wallpaper to the following location: Open the 'Home' Folder, which is located on the Desktop. Double-click the 'Pictures' sub-folder to open it. Now copy and paste our wallpaper choices into that folder. When we right-click on the Desktop, then click on 'Change Desktop Background', our wallpaper that we pasted into the 'Pictures' sub-folder in the previous move, will now all be accessible when we click on 'Pictures'.

APPLETS TO ADD OR DELETE: To add an applet, right-click on any empty space on the Panel (located at the bottom of the Desktop), then left-click '+ **Add applets to the panel**' from the pop-up. Next, right-click on the Icon we wish to add, then click 'Add to Panel'. If we want to remove the Icon (applet) from the Panel instead, click 'Remove from panel'.

SUDO: We should **not** use sudo to install ordinary applications, as unnecessary use of it can mess up our files. If we use it to launch an ordinary application, it creates files and directories that are the property of 'root', and not of us. It also changes ownership of some existing files to 'root'. Use the Software Manager whenever possible, as it is the central file installer for the system, and infections will be very difficult to enter the system this way.

.DEB FILES: Avoid the overuse of .deb files where possible, as problems might occur. However, there are some programs that require it.

DECREASING THE SWAP USE: **Decreasing the Swap Use may be RISKY to the System, but this is simply my opinion**.

THE COMPUTER MONITOR: If installing Linux Mint on our own computer, it will adjust itself to the size of the monitor used whilst installing it. If installing Linux Mint for someone else whilst using our monitor, they may have to adjust their monitor's screen resolution when they take their computer home, otherwise the Desktop may over or under-fill' the screen. To reset it: Click 'Menu', 'Preferences', and then 'Display'. The monitor's resolution can now be set for correct viewing. The correct resolution might be 800x600 (4:3), **or** 832x624 (4:3), **or** 1024x768 (4:3), **or** 1152x864 (4:3), **or** 1280x960 (4:3), **or** 1280x1024 (5:4), **or** 1440x900 (16:10), **or** 1680x1050 (16:10), **or** 1920x1080 (16:9), and so on. When the correct resolution is selected, then the screen will fill correctly.

Before someone takes their computer home, it may be useful to place the 'Display' icon in an accessible location on their Desktop. This can be done as follows: Click 'Menu', then 'Preferences', then right-click on 'Display'. From the pop-down box, left-click on 'Add to Desktop'. They can then set the screen's 'Resolution' more easily at home, should the monitor overfill.

RESTORING LINUX MINT'S DEFAULT SETTINGS: (only if necessary)
1. Right-click on any empty space on the 'Taskbar' (located at the bottom of the Desktop screen).
2. In the pop-up box, click on 'System Settings'. The System Settings box appears.
3. Click on the 'Applets' icon to open its' window.
4. Click 'Restore to default', located at the bottom right side of the 'Applets' box.
5. A message says: 'This will restore the default set of enabled applets: Are you sure you want to do this". Click 'Yes'.

CD / DVD BURNING SOFTWARE:
The following work on the Cinnamon Desktop. There are also others.
'**Brasero**' (for the Cinnamon Desktop) burns data, etc, as well as **ISO**'s to CD and DVD.
'**K3b**' (for KDE Desktop) handles Blu-ray burning. It also burns audio and video to CD and DVD.

'**Xfburn**' (for xfce Desktop) burns data, etc, as well as **ISO**'s to CD and DVD.
'**Nero for Linux**' is available, but is **not free**.

When inserting either a CD or DVD to burn to, a message appears: ‘You have just inserted a blank CD / DVD. Choose which application to launch, then follow the prompts’. Cancel this window, open the burner of choice, and then follow the prompts. The first three program icons can be located as follows: Click ‘Menu’ and then ‘Sound & Video’. They are easy to use.

SYSTEM FREEZES: If we press Ctrl+ALT+Delete, we can log out of the system under normal conditions. However, if the system freezes, we can press Ctrl+Alt+Backspace to return us to the login screen without having to reboot the system. If these fail, we can unplug the computer from the power, and then restart it.

PRINTERS: (**getting them recognized**). Some printers are automatically recognised. If they are not, then the following five steps usually works.

1. Connect the printer to the computer and turn it (the printer) on. Make sure the internet lead is connected. Click 'Menu', then 'Administration', and then 'Printers'. The 'Printers - Localhost' box appears. If the printer is not automatically detected, proceed as follows:

2. In the ‘Printers-localhost’ window, click’+**Add**’. The ‘New Printer’ (Select Device) window opens. Click once on the printer’s name to highlight it. On the right-side under ‘Description’, the following appears: ‘A printer connected to a USB port’. If the printer connects via USB, then ‘USB’ will be highlighted near the bottom. Click ‘**Forward**’ near the bottom right-side.

3. A new window appears named ‘New Printer’ (Choose Driver). Leave ‘Gutenprint’ highlighted, select ‘Free Software’ then click ‘**Forward**’. The small ‘Installing driver openprinting-gutenprint’ window appears with the following message: ‘Installing...’. This may take a while.

4. The ‘New Printer’ (Choose Driver) window reopens. Click a dot beside ‘Select printer from database’, then click on the brand of choice. In our case I clicked on ‘Canon (recommended)’ to highlight it, and then clicked ‘**Forward**’. Another ‘New Printer’ (Choose Driver) window appears, which lists a lot of printer models. In our case I chose ‘MP490 (recommended)’ which was already highlighted, and then clicked ‘**Forward**’.

5. A ‘New Printer’ (Describe Printer) window shortly appears. It should have the printer’s description in the first two tiny windows. The third tiny window might have something like ‘john-All-Series’. Click ‘**Apply**’. A tiny box appears. A new window named ‘Would you like to print a test page?’ soon appears. If so, place paper in the printer then click ‘**Print Test Page**’. A small window then opens named ‘Submitted’, (Test page submitted as job 1). Once printed, click ‘OK’, then cancel out of the the window when ready.

PRINTERS: **(continued)** Printer drivers are also available from the Software Manager. If we wish, we can type ‘printers’, then ‘printer drivers’, then 'ubuntu-drivers', each in their turn, into the ‘Software Manager’ search window, then manually install some the drivers we think we might need. We may **not** get the drivers we need this way though. Under '**printers**' in the Software Manager, there is 'printer-driver-cjet', plus some other drivers. Under '**printer drivers**' in the Software Manager, there is 'foomatic-db-gutenprint', 'printer-driver-all', 'printer-driver-all-enforce' (and 'Printer-driver-gutenprint' which should come installed). Under '**ubuntu-drivers**', there is 'ubuntu-drivers-common', etc. These drivers allow for some other printers to be recognized. However, none of this should be necessary if we follow the information in the previous section.

Once the printer is set up, it is not necessary to click on the ‘Printers’ Icon in order to print. The printer’s software window is simple, but is OK. For an HP Printer, install the ‘**HPLIP Toolbox**’ software, also available from the ‘Software Manager’ screen.

See **https://forums.linuxmint.com/viewforum.php?f=51** for information on installing printer-scanners.

SCANNERS: Even though we can download free drivers for most printers, when it comes to scanners, not all are recognised.

As our Canon CanoScan 5600F flatbed scanner did not work in Linux, but did work on our computer with XP installed, then we did not bother looking further until now. We have since tested some printer-scanners, which worked well. They are included below for information’s sake.

1. We installed a **Canon MP495** printer-scanner, using the five steps in the previous Printer section. Its’ scanner side was also recognised when we opened ‘Simple Scan’, which comes pre-installed.
2. Next a **Canon MX410** printer-scanner was connected to the same Linux system, and its’ printer side was recognised, without going through the five steps in the printer section, due to our having previously installed the Canon MP495 unit. Its’ scanner side was also recognised when we opened ‘Simple Scan’.
3. Then we connected a **Canon MP270** printer-scanner. Its’ printer side was recognised, without going through the five steps in the printer section, due to our having previously installed the Canon MP495 unit. Its’ scanner side was also recognised when we opened ‘Simple Scan’.
4. Afterwards we connected an **HP Deskjet 1050** printer-scanner. As we had previously installed the software HPLIP Toolbox, it was then able to print without following the five steps in the Printer section. It could also scan, using ‘Simple Scan’.

A variety of drivers can be downloaded in the Software Manager for scanners. Under '**xsane**', there is 'xsane' and 'xsane-common'. Under '**hplip**', there is 'hplip-gui', 'hplip', 'hplip-doc', and 'hplip-data', all of which installs the HPLip Toolbox (for printing and imaging).

HPLip stands for (Hewlett-Packard Linux **Imaging** & Printing). Linux is said to be able to print and scan on a number of HP inkjet and laser based printers. For a list of supported HP units, go to: **http://www.hplipopensource.com/hplip-web/supported_devices/index.html**.

Under '**scanners**' in the Software Manager there is 'sane-utils', 'libsane', 'libsane-common', 'libsane-dbg', 'libsane-dev', 'libsane-extras', 'libsane-extras-common', 'libsane-extras-dbg', 'libsane-extras-dev', etc. However, unless we have the correct driver for a particular scanner, then the scanner may not work.

CAMERAS: Digital cameras are quickly identified, and choices on what to do with the images are available. The following can be downloaded in the Software Manager: 'UFRaw', 'ufraw-batch', and 'gimp-ufraw' imports raw data into the Gimp, etc.

DOCUMENT SCANNING WITH A CAMERA: There are iPhones available that can photograph a document, crop it and then email it to anyone. It can also be done as follows:

If we need a copy of a document to email on to someone, and if we don’t mind if it is not photo perfect, though still quite clear, then the following is one way to do it: This is also handy for cropping an already existing photo or jpg document.

1. Take a good photo of the document with our camera, then save it to, e.g. the Desktop (unopened).
2. Open '**Gwenview**' (available from the 'Software Manager').
3. Click 'File', located at the top-left side of the Gwenview screen.
4. Click 'Open' from the drop-box.The 'Open Image-Gwenview' box appears.
5. Click 'Home' near the top-left of this box. Some folders now appear in the section to the right.
6. As the photo to be cropped was saved to, e.g., the Desktop, then double-click on 'Desktop'.
7. Locate, then click once on the photo to be cropped, then click 'Open' near the bottom-right of the same box. The uncropped photo now opens.
8. Click 'Edit' near the top-left of the main screen, then click 'Crop' from the drop-box.
9. Place the mouse pointer on the middle of each of the lines in turn, then drag them inwards to set the new borders of the photo.
10. Click 'Crop' near the middle-bottom of the main screen.
11. To save the file, click 'File' near the top-left.
12. Click 'Save As'. The 'Gwenview' box appears.
13. Click 'Save'. The cropped photo will now be saved in the same format and location as the original photo, unless indicated otherwise.

Another way to crop the photo of the document is as follows (I prefer the first method):
1. Take a good photo of the document, then save it to, e.g. the Desktop (unopened).
2. Open **KSnapshot** (available from the 'Software Manager'). It can be left open.
3. Right-click on the photo image we placed on, e.g. the Desktop in move one, click 'Open With', then click on 'Image Viewer'. The Image now opens.
4. Click once on the 'Ksnapshot' shortcut on the Taskbar to open its' small box.
5. Click. e.g. 'Rectangular Region' into the 'Capture Mode' section.
6. Click 'No delay' into the 'Snapshot delay' section.
7. Click 'Take a New Snapshot'. We can now set the boundaries by holding the left mousekey down while dragging it to set the new boundaries. A highlighted area appears.
8. Click 'Enter' on the keyboard.
9. Click 'Save As' at the bottom right of the small box. The 'Save As-Ksapshot' box appears.
10. Click the drop-box in the 'Filter' section at the bottom, then click once on, e.g. 'JPEG Image'. The drop-box now disappears.
11. Click 'Save'. The image will be saved to the same location as the original image.
12. Now cancel our of 'Ksnapshot' as well as the image.

SCREEN CAPTURE: The previously mentioned **KSnapshot** is a good choice, and is is what we have used to create and then add those snapshots to this manual. Another good choice is 'Shutter', which is also easy to use. There are other choices as well.

REDUCING IMAGE SIZE FOR EMAILING: Install **simple-image-reducer**. This is a fast program to reduce the size of jpg's etc for emailing. It worked well for us with the following settings:

First add the files for adjusting.
Fit to: 1024x1024.
Rotate: No rotate.
Output Files: Save to "1024x1024" subdirectory.
Output format: e.g. JPEG.
Then click 'Execute'.

WHAT OPENS SOME OF OUR OLD FILES:
DjVu eBooks: 'Okular'. 'Document Viewer' (e.g. Xreader). Also **install** 'DjVuLibre DjView 4'.
Email Client: To open our old 'Outlook Express' and 'Windows Live Mail' emails, both of

which have an .eml ending, i**nstall** 'Sylpheed', and/ or Claws Mail. How to setup Sylpheed and Claws Mail, in part, appears further on.

Epub eBooks: **Install** ‘FBReader' (e.g. ‘E-book Reader’), as well as '**E-Book Viewer**'. 'E-Book Viewer' may install with 'Calibre'. They both retain page location.

FLV movies: 'VLC media player', ‘Videos' (e.g. 'Totem'). **Install** 'SMPlayer', ‘**Gnome Mplayer**'.

HTML files: 'Mozilla Firefox Web Browser'.

JPG: 'Image Viewer'. **Install** 'gthumb', 'Gwenview' and 'ImageMagick'.

MHTML files: **Install** 'Qupzilla'.

Mpeg 4: 'Videos', e.g. 'Totem'. 'VLC media player'.

M.S. Word: 'LibreOffice Writer'. I**nstall** 'AbiWord' (it can be useful).

Mobipocket: **Install** ‘FBReader' (e.g. ‘E-book Reader’), and eBook Viewer.

Movies (some old **AVI** movie files from the Internet Archive): 'Videos', e.g. 'Totem'. **Install** 'Enqueue in SMPlayer'. 'SMPlayer'.

Movies (The DVD VOB movie files): 'VLC Media Player', 'Videos', e.g. 'Totem'. After inserting the movie DVD, right-click on the tiny DVD Icon that appears on the Desktop, click ‘Open with’, then click on either ‘VLC media player’, or ‘Videos’.

MP3: VLC media player. **Install** ‘**Audacious**', etc.

PDF (for viewing): ‘Document Viewer’ (e.g. Xreader). **Install** 'Okular'.

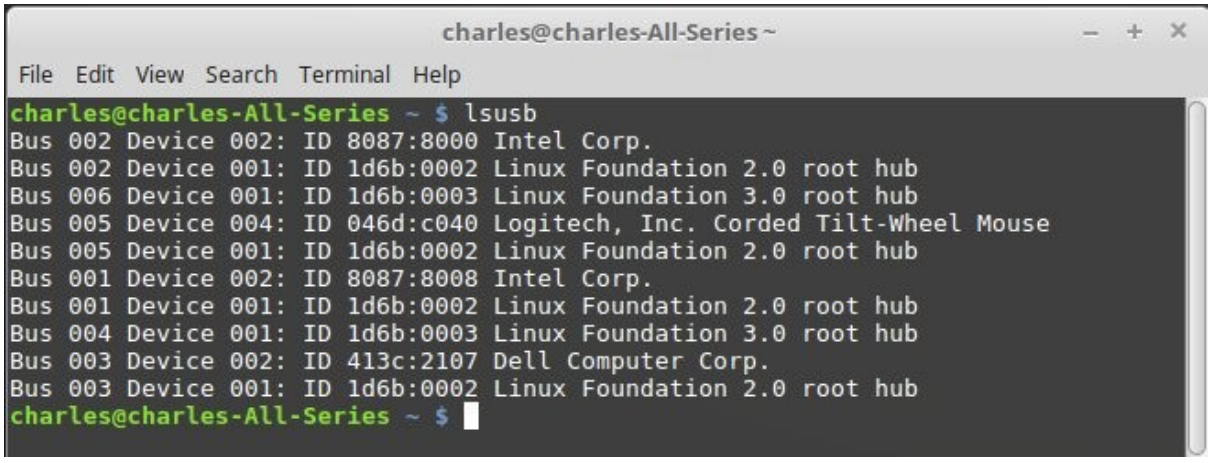
PDF (to print to PDF): 'LibreOffice Writer' (e.g. ‘Export as PDF’)

Powerpoint: 'LibreOffice Impress'.

Read documents aloud: **Install** 'Gespeaker'. It works ok. Also 'eSpeak speech synthesizer' e.g 'espeak-gui'.

Text: Text Editor (e.g. Xed) comes installed in 18.1.

DOES OUR COMPUTER HAVE A USB 3.0 PORT: If it does, the interior of the computer’s USB port in question should be blue. A further check is to paste **lsusb** into the Terminal, then follow the prompts. The following image may vary from computer to computer, but as long as it lists **ID 1d6b:0003 Linux Foundation 3.0 root hub**, then the computer has at least one USB 3.0 port. In the following image, it appears on the third line.



SOME TERMINAL COMMANDS: To open the Terminal, click 'Menu', then 'Terminal' from the pop-up box on the left. It is also located on the Panel (at the bottom) for faster access. The following are only a very few of the Terminal commands available. There are also some scattered throughout this document.

The following web page lists an extensive list of Terminal commands.. To view and navigate the list, copy and paste **https://community.linuxmint.com/tutorial/view/244** into the Web’s search engine.

The following list of Terminal commands are useful for quick access to the computer's specs:

inxi -Fxz (or **inxi -Fx**)supplies data about the computer's hardware, etc.
lscpu supplies data about the cpu.
sudo lshw -short supplies data on the cpu, memory, and more.
lspci supplies data on the pci buses, etc.
lsblk supplies data on all block devices, being the hard drive partitions, etc.
df -H supplies data re partitions, their mount points, and their available space.
free -m supplies data on the amount of free and used ram.
sudo dmidecode -t processor supplies data on the processor.
sudo dmidecode -t bios supplies data on the bios.
cat /proc/cpuinfo supplies data on the cpu.
cat /proc/meminfo supplies data on the ram.
cat /proc/version supplies data on the kernel.
cat /proc/scsi/scsi supplies data on the scsi/sata devices.
cat /proc/partitions supplies data on partitions.
sudo hdparm -i /dev/sda supplies data on data devices.

THESE COME ON THE INSTALLATION DVD: As they come on the installation DVD, none of them should be deleted. (There are about **90-items** listed below).

Accessibility.
Account details.
Applets.
Archive Manager.
Backgrounds.
Backup Tool.
Bluetooth.
Calculator.
Character Map.
Color.
Date & Time.
Desklets.
Desktop.
Desktop Sharing.
Disk Usage Analyser.
Disks.
Display.
Document Viewer.
Domain Blocker.
Driver Manager.
Effects.
Extensions.
Files.
Firefox Web Browser.
Firewall Configuration (e.g. gufw).
Font Viewer.
Fonts.
General.
GIMP Image Editor.
Graphics Tablet.
Help.
HexChat.
Hot Corners.
Image Viewer.

Input method.
Keyboard.
Languages.
LibreOffice.
LibreOffice Base.
LibreOffice Calc.
LibreOffice Draw.
LibreOffice Impress.
LibreOffice Math.
LibreOffice Writer.
Login Window.
Media Player
Mouse and Touchpad.
Network.
Network Connections.
Notifications.
Panel.
Passwords and Keys.
Pidgin Internet Messenger.
Pix.
Power Management.
Power Statistics.
Preferred Applications.
Printers.
Privacy.
Rythmbox
Screen Reader.
Screensaver.
Screenshot.
Simple Scan.
Software Manager.
Software Sources.
Sound.
Startup Applications.
Synaptic Package Manager.
System Info.
System Log.
System Monitor.
System Settings.
Terminal.
Text Editor.
Themes.
Thunderbird Mail
Tomboy Notes.
Transmission.
Update Manager.
Upload Manager.
USB Image Writer.
USB Stick Formatter.
Users and Groups.
Virtual keyboard.
VLC media player.
Welcome Screen.
Window Tiling.
Windows.
Workspaces.

A FEW ESSENTIAL EXTRAS: Listed below are some programs that could be considered to be essential extras. It is said there were about 85,000 free packages for Linux Mint 64-bit Cinnamon available in the Software Manager by August of 2017, though it usually takes more than one or so packages to make one program. The software's download name may occasionally differ from its' installed name, which can make software more difficult to locate. Where possible, both names have been added to make the them easier to locate in the Software Manager. To install any or all of the following: Click 'Menu', then the 'Software Manager' Icon (second from the top on the left). Enter the 'Password' then wait for the 'Software Manager' box to open. 'Type' the name of the software we want into the tiny search window, press 'Enter', then follow the prompts. Make sure the correct software is installed to suit either the 32-bit system or the 64-bit system. (There are about **56-items** listed below).

APTonCD. (installation disc creator for packages downloaded via apt)
Artha. (a handy off-line thesaurus based on WordNet)
Audacity. (a fast cross-platform audio editor).
Brasero. (CD burning application for gnome)
Calibre. (an E-book converter and Library Management). It supports MOBI, LIT, PRC, EPUB, ODT, HTML, CBR, CBZ, RTF, TXT, PDF and LRS. It also installs 'E-Book Viewer'.
Calligra. (an extensive productivity and creative suite). It may require a restart after installing it.
Chkrootkit. (a rootkits detector). See '**CHKROOTKIT**' elsewhere in this document, to install it in the Terminal.
Clamtk. (Clamtk is a graphical front-end for Clam Antivitus). After it is installed, and after a computer restart, the following are also ticked in the Software Manager: Clamav-base, Clamav-freshclam, Libclamav7, and Clamav.
Claws Mail, e.g. claws-mail. (a fast, lightweight and user-friendly gtk+2 based email client). It is similar to Sylpheed. We also installed **Claws-mail-extra-plugins**.
ClipGrab. See '**CLIPGRAB, THE VIDEO DOWNLOADER'**, further on in this manual. If we paste a clip's url into it, it downloads the film clip as an mp4.
DjView4. (a viewer for the DjVu image format)
djvulibre-bin. (a viewer for the DjVu image format)
djvulibre-desktop. (Desktop support for the djvu image format)
E-book reader, e.g. FBReader. (it opens ePub, HTML, MHTML, Mobipocket)
E-book Viewer. (it opens ePub). It is automatically installs with Calibre.
Gedit. (an official text editor of the gnome desktop environment)
Gimp. It comes pre-installed. Now install any necessary extras.
gimp-ufraw. (Gimp importer for raw camera images)
GNOME Mplayer, e.g. gnome-mplayer. (gtk + interface for MPlayer)
GParted. (a Gnome partition editor)
Gwenview. (an image viewer)
Htop. (Interactive processes viewer)
Isomd5sum. (Iso9660 checksum utilities)
K3b. (a sophisticated CD/DVD burning application). After restart, the following have also been ticked in the Software Manager: k3b-data, and Libk3b6.
KSnapshot. (a screen capture tool)
KsysGuard, e.g. ksys. (a kde task and performance monitor. View the cpu and memory usage)
KsystemLog. (a system log viewer)
Kwrite. (a simple text editorbuilt on the KDE Platform)
Lame: (an MP3 encoding library. An essential frontend)
Leafpad. (a gtk + based simple text editor)
LRF Viewer. (it installs when Calibre is installed)
Midori. (a fast, lightweight graphical web browser)
Nemiver. (a stand-alone graphical debugger for Gnome)
Okular. (a universal document viewer, PS, PDF, ODT, DVI, XPS, G3 fax, comics. KDE)
Partclone. (a utility to clone & restore partitions). 'Redo Backup and Recovery' is a frontend to 'Partclone', which does the actual backup and restore. See 'Full backup & restore with 'Redo Backuo & Recovery' further on in this document.

Psensor. (it displays graphs for monitoring hardware temperature)
PyRoom. (a distractionless fullscreen text editor). Once opened, click 'Ctrl' and 'H' to navigate the commands.
QupZilla. (a lightweight web browser based on libqtwebkit) It also reads Mhtml.
Rkhunter. (for rootkits)
Sane. (Scanner graphical frontends)
Shutter. (a feature-rich screenshot program)
Simple Image Reducer, e.g. simple-image-reducer. (easy to reduce image size for emailing)
SMPlayer. (a complete front-end for MPlayer and MPlayer 2)
Startup Disk Creator, e.g. usb-creator-kde. (using a USB key or SD card for KDE)
Startup Disk Creator, e.g. usb-creator-gtk. (using the above for Gnome)
Sylpheed. (a lightweight e-mail client with gtk+). It is similar to Claws Mail. One drawback is it can't send html. However, it can receive it. Install any extra packages of our choice.
System Profiler and Benchmark, e.g. hardinfo. (it displays a lot of system info)
Totem. (a simple media player for the gnome desktop based on gstreamer). It installs 'Videos'.
UFRaw. (a standalone importer for raw camera images)
Videos is installed with 'Totem'.
VirtualBox. **Do NOT install VirtualBox now if we <u>are</u> going to install Robolinux later on**. When we install RoboLinux, it will both install and setup VirtualBox to suit our RoboLinux requirements. If we are <u>not</u> going to install RoboLinux, then we can install VirtualBox as shown below for testing various operating systems:

Install '**Virtualbox (base)**', and '**Virtualbox**'. Make sure the following are also installed: '**Virtualbox-dkms**', as well as '**Virtualbox-ext-pack**', '**Virtualbox-guest-dkms**', and '**Virtualbox-guest-utils'**, as well as '**Virtualbox-guest-x11**'.
Wordview Microsoft doc Viewer, e.g. 'catdoc'. (a Word to tex or plain text converter)
Xfburn. (a CD-burner application for xfce desktop environment. ISO's, audio CD's, etc)

A FEW NON-ESSENTIAL EXTRAS:

(There are about **54-items** listed below)
Aisleriot. (gnome solitaire card game collection)
Asunder. (a graphical audio ripper and encoder)
Audacious. (a small and fast audio player)
Bovo. (Gomoku five in line board game)
CD Player, e.g. Goobox.
Chess 3.8.3., e.g. gnome-chess. (a 2D/3D chess game for Gnome)
Clementine. (a modern music player and library organizer)
Colorcode. (an advanced clone of the Mastermind code-breaking game)
Comix. (a Gtk comic book viewer)
DeVeDe. (a simple application to create video DVD's) It removes Mplayer + libavcodec54.
….Dropbox. (share and store our files online). I did not install it.
easyMP3Gain-gtk. (Gtk+-gui for mp3gain, vorbisgain and aacgain)
Extreme Tux Racer, e.g. extremetuxracer.
FocusWriter e.g. focuswriter. (a fullscreen distraction-free writing program)
Galculator. (a scientific calculator)
Gespeaker. (a gtk + front-end for espeak and mbrola)
GNU Backgammon, e.g. gnubg. (a graphical or console backgammon program with analysis)
GnuCash. (a personal and small-business financial-accounting software). Also install the following: **Gnucash-docs**.
Gnumeric. (a spreadsheet application for Gnome – main program). **Install the extras**.
gResistor. (resistor colour code calculator)
Gweled: (a diamond mine puzzle game)
HomeBank. (to manage personal accounts at home)
'**HPLip Fax Utility**' **and** '**HPLip Toolbox**' both install with <u>Hplip-gui</u>. Also install: Hplip-doc.
Inkscape. (a vector-based drawing program). Also install '**Sozi**'.
Kbackup. (an easy to use backup program)

kCalc. (a simple and scientific calculator)
kDiskFree, e.g. kdf. (a disk information utility)
KGeography. (a geography learning aid for kde). It may need a restart.
Kmahjongg. (a mahjongg solitaire game). A computer restart may be necessary.
KMyMoney. (a personal finance manager for kde)
Kover. (a wysiwyg cd cover printer)
KPatience, e.g. kpat (fourteen solitaire card games)
Kraft. (a small business-management application)
LibreCAD. (a computer-aided design cad system)
Mcomix. (Gtk+ image viewer for comic books)
Mtink. (a status monitor tool for Epsom Inkjet printers). Also install: **Mtink-doc.**
PDF-Shuffler, e.g. pdfshuffler. (merge, split and re-arrange pages from pdf documents)
Pybik. (Rubik's cube game)
PySol Fan Club Edition, e.g. pysolfc. (more than 1,000 solitaire type games)
Qcomicbook. (a qt viewer for comic book archives, cbr, cbz, cba, cbg, cbb)
qpdfview. (a tabbed document viewer)
Rawtherapee. (a raw image converter and digital photo processor)
Remmina. (a remote desktop client for gnome desktop viewing)
Robolinux. See '**VIRTUAL MACHINES AND ROBOLINUX**' elsewhere in this document.
Scan Tailor, e.g. scantailor. (a post-processing tool for scanned pages)
Shisen-Sho, e.g. kshisen (a solitaire game)
Skanlite. (an image scanner for kde, based on gthe Kscan backend)
Sound Converter, e.g. soundconverter. (requires Gstreamer LAME plugin)
Sound Juicer, e.g. sound-juicer. (a CD ripper for Gnome)
soundKonverter, e.g. soundkonverter. (an audio converter frontend for kde)
Stellarium. (a real-time photo-realistic sky generator)
Sudoku, e.g. gnome-sudoku. (a sudoku puzzle game for gnome)
Supertuxkart. (a 3d kart racing game)
Tanglet. (Single player word finding game based on boggle).
Tetravex, e.g. gnome-tetravex (put tiles on a board and match their edges together)
Tetzle. (a jigsaw puzzle game)
YAGF. (a graphical interface for Cuneiform and Tesseract). Cuneiform is a multi-language **OCR** system, but it needs a working scanner for the full benefits.

FIREWALL (e.g. gufw, or uncomplicated firewall).It comes with the Linux Mint 18.2 installation DVD, and can be located as follows: Click 'Menu', then 'Preferences', and then 'Firewall Configuration'. After entering the Password, the 'Firewall' box appears. At this stage it is not configured. To configure the Firewall, click 'ON' in the **Status:** window. Click 'Deny' in the **Incoming:** window, and click 'Allow' in the **Outgoing window**. The Firewall can be enabled or disabled when necessary by following or reversing these steps. At any time we can check our current DENY IN / DENY OUT settings by pasting **sudo ufw status verbose** in the Terminal.

A simple setup:
We can reset the UFW rules to the installed defaults by first pasting **sudo ufw reset** into the Terminal, after which we must turn the Firewall back on as shown above. These settings, though simple, block incoming connections, whilst allowing us to do web searches (servers require different settings, as they have to deal with incoming requests). We will also need to allow for the sending and receiving of our emails as follows: Enter **sudo ufw allow out 22:52/tcp** into the Terminal to enable the sending of emails, and **sudo ufw allow out 81:122/tcp** into the Terminal to enable the receiving of emails. These two commands also apply to Virtual Machines.

A more secure setup:
In this section we will first reset the firewall rules, e.g., **sudo ufw reset**, after which we will turn the Firewall on and active (how to do both is shown above). We will then **deny in** and **deny out** the rules (the rules are in bold print below, numbered 1 to 20) shown below, by entering them one by

one into the Terminal, and finalizing them one by one. If we decide to reverse any of the commands later on, we can do so. Take the first one that appears in the ‘To block incoming Ports:’ section below, e.g. **sudo ufw deny 5353/udp**. To allow it after denying it, paste the following into the Terminal: **sudo ufw allow 5353/udp**. In other words, replace 'deny' with 'allow'.

The following list are the rules we applied to our own PC’s (not servers). **tcp** stands for Transmission Control Protocol, and **udp** stands for User Datagram Protocol. (**ssh** stands for Secure Shell).

To block incoming Ports: (e.g. deny in)

1. **sudo ufw deny 5353/udp**
2. **sudo ufw deny 5900/tcp**
3. **sudo ufw deny 22**
4. **sudo ufw deny 25/tcp**
5. **sudo ufw deny 135,139,445/tcp**
6. **sudo ufw deny 137,138/udp**
7. **sudo ufw deny 110**
8. **sudo ufw deny 2049**
9. **sudo ufw deny 143**
10. **sudo ufw deny 21/tcp**

sudo ufw deny ssh - This blocks the Port used for cloud servers.

The next configuration allows for the following outbound ports: 20-21, 53, 80, 123, 443, which is all that is required for many users, unless planning on running a server:

To block outgoing Ports: (e.g. deny out)

11. **sudo ufw deny out 1:19/tcp**
12. **sudo ufw deny out 1:19/udp**

sudo ufw deny out 22:52/tcp (ignore, so as to allow outgoing emails on the PC or the VM)

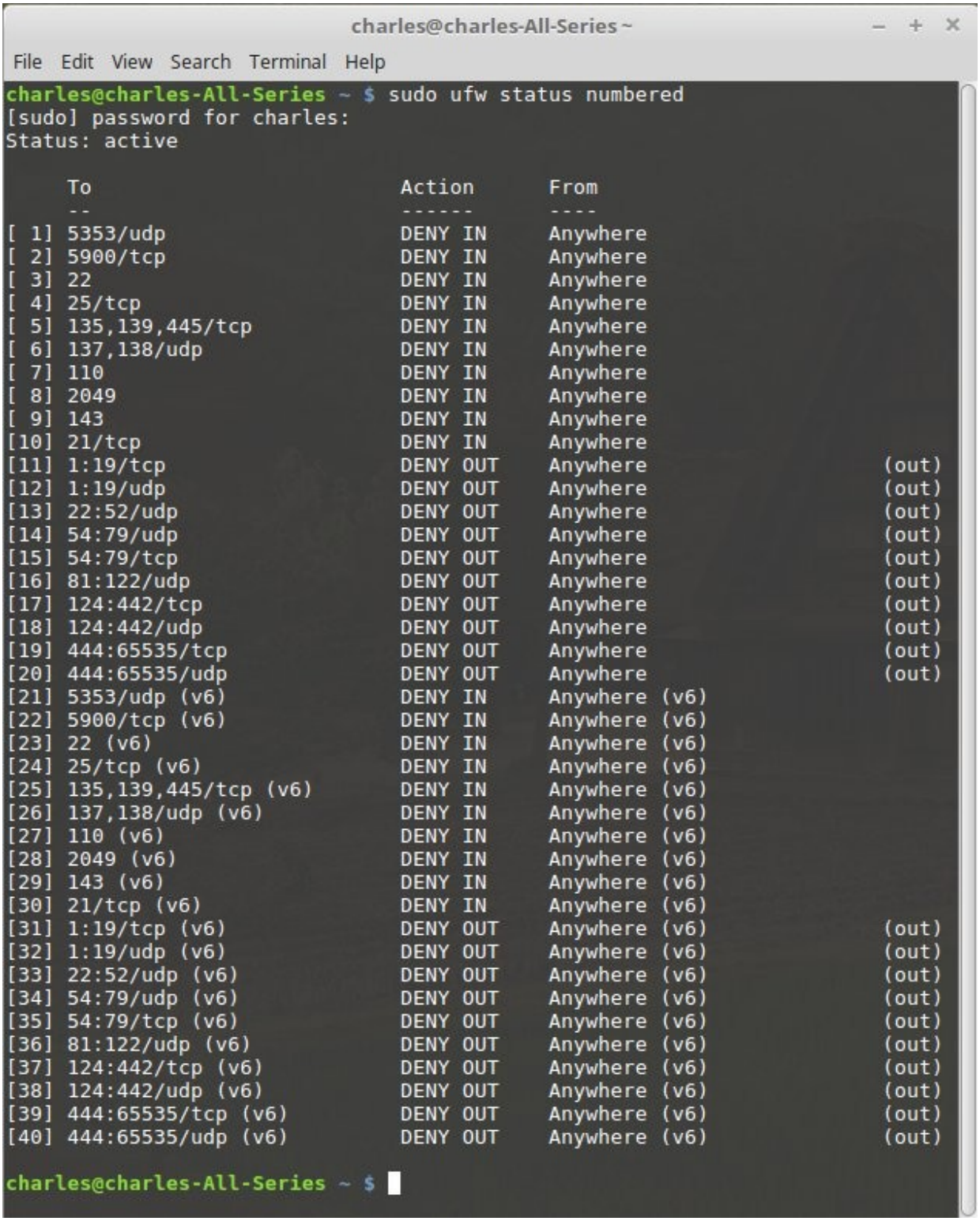
13. **sudo ufw deny out 22:52/udp**
14. **sudo ufw deny out 54:79/udp**
15. **sudo ufw deny out 54:79/tcp**

sudo ufw deny out 81:122/tcp (ignore, so as to allow incoming emails on the PC or the VM)

16. **sudo ufw deny out 81:122/udp**
17. **sudo ufw deny out 124:442/tcp**
18. **sudo ufw deny out 124:442/udp**
19. **sudo ufw deny out 444:65535/tcp**
20. **sudo ufw deny out 444:65535/udp**

Re-check our changes: We should now re-check our changes. Paste **sudo ufw status verbose** into the Terminal, then press Enter. We can now view a list of 'DENY IN' as well as 'DENY OUT'. If we wish to view the firewall rules as numbered, then enter **sudo ufw status numbered** into the Terminal instead (e.g. as shown above and below). It should appear as follows:

continued...



Re-check enable (required): Paste **sudo ufw enable** into the Terminal, then click Enter. If all is secure a message will say 'Firewall is active and enabled on system startup'.

DO WE NEED ANTIVIRUS OR ROOTKIT REMOVERS:
See ‘ANTIVIRUS’, CHKROOTKIT’, and ‘RKHUNTER’ next. There are good arguments why we may not need an Antivirus or a RootKit remover in Linux Mint, Ubuntu and Debian. However, each person should do their own research here. We installed them, even though they are probably not always needed.

ANTIVIRUS: Viruses are not a big problem in Linux systems, as viruses that affect Windows operating systems can sit inside Linux systems without harming them (as a rule). This means it could be passed on to someone's Windows OS unintentionally. If we install sufficient safeguards in a Linux system, we can reduce this possibility, and perhaps block these viruses.

1. **ClamTK** can be installed in the Software Manager. Clam Tk is a graphical front-end for **ClamAV**. They can also both be installed by pasting s**udo apt-get install clamav clamtk** in the Terminal, which is a good way to go. Their main use is in scanning emails. However, the overuse of 'sudo' is not advised.

2. When scanning for viruses in the Home directory, paste **clamscan -r /home** into the Terminal, then press 'Enter'. It can take some time to scan the Home directory, but it will give a read-out at the finish.

3. If we need to uninstall clamtk, paste **sudo apt-get remove clamtk*** into the Terminal, then follow the prompts. It can also be uninstalled in the Software Manager. However, we have never had a need to do so to date.

CHKROOTKIT is a tool that checks the local system for rootkit infections. It contains a 'chkrootkit: shell script' that checks system binaries for rootkit modification. To install, paste ***sudo apt-get install chkrootkit*** into the Terminal, then follow the prompts. To scan with chkrootkit, open up the terminal and type the command: *$* ***sudo chkrootkit***. This will perform some necessary tests.

Though CHKRootKit and RKHunter are similar in what they do, we can still use both.

RKHUNTER: It can be installed in the Software Manager. RKHunter scans files and systems for known and unknown rootkits, backdoors, sniffers, and malware. The application consists of the main shell script, a few text-based databases, and optional Perl scripts. It can recognise and run external applications like 'skdet' and 'unhide'. It should run on almost every Unix clone. To **run** Rkhunter, open the terminal and paste the following there: **sudo rkhunter --check**. This will perform all the necessary tests. By default, the log file '*/var/log/rkhunter.log.2.gz*' will be created. It will contain the results of the checks made.

The following allows rkhunter to update its text data files by pasting them into the Terminal and completing them one by one: **sudo rkhunter --update**, and **sudo rkhunter --propupd**. We will probably get some false positives when we run rkhunter, which also happens on fresh installations.

NEMIVER: It is a stand-alone graphical debugger for the Gnome Desktop, and can be installed either using the Software Manager or the Terminal. If we wish to install it in the Terminal, then paste **sudo apt-get install nemiver** there. Once installed, it is located in: 'Menu', 'Programming', then 'Nemiver'. For assistance, click on 'Help' at the top of the Nemiver window, then click on 'Contents' or press 'F1' to open the Nemiver manual. After the manual opens, we can, if we wish, access a number of other manuals by clicking 'Go', and then 'All Documents'.

REMOVING UNNECESSARY PACKAGES: Paste **sudo apt-get autoremove** into the Terminal, press Enter, then follow the prompts to remove any unnecessary packages.

BROWSERS: It seems that some Web Browsers will no longer be supported on 32-bit systems in the not distant future. If this happens, we may be limited to less popular and smaller 32-bit browsers on our 32-bit systems. In this case it may be advisable to install 64-bit operating systems on more recent computers.

The Web Browsers on our computers are: "Mozilla Firefox Web Browser', 'Midori' and 'Qupzilla'. The email clients we have are 'Claws Mail', '**Sylpheed**', and 'Thunderbird Mail'.

MAKING FIREFOX OUR DEFAULT BROWSER. Click the 'Open Menu' button (at the top right of the page), then click on 'Preferences' from the drop-box. The 'Preferences - Mozilla Firefox' General screen appears. Click a tick in the box beside 'Always check if Firefox is your default browser', then click 'Make default'.

THE ADOBE-FLASH PLUGIN (adobe-flashplugin). It comes installed by default in Linux Mint, and works in Mozilla Firefox. In Feb. 2017, we pasted the following into the Terminal of our 64-bit OS: **sudo apt-get install adobe-flashplugin**, and got the following: **adobe-flashplugin is already the newest version (1:20170808.1-0ubuntu0.16.04.1)**. We can read more on this in this manual: '**AN OPTION WHILST INSTALLING LINUX MINT 18.2**', and then read the following info: '**HOW TO INSTALL MEDIA CODECS AFTER INSTALLATION**', elsewhere in this document.

SYLPHEED (MAIL): Sylpheed can be installed from the Software Manager. In our case we also installed 'sylpheed-doc' and 'sylpheed-plugins'. There are additional choices also. One drawback, it can't send html, but it can receive it. Sylpheed is our choice as an email client.

Sylpheed is a free and open source email and news client, and it configures easily. The mail is stored in the **MH** mail file format. It runs on some Linux operating systems as well as some Windows operating systems. Sylpheed saves our emails with an **.eml** case ending when saving them to a folder of our choice. That folder might be on the Desktop, ot a location of our choice. After Sylpheed is installed, click 'Help', located at the top, then rest the mouse pointer on 'FAQ', then click on 'English' to its' right. The 'Sylpheed FAQ' screen soon appears. We can then study how it works, and set it up to suit our own needs.

When setting up this free account, our moves are determined by our '**Server type**'. The four choices are 'POP3', 'IMAP4', 'POP3 (Gmail)', and 'IMAP4 (Gmail)'. In our case, we have a phone-line connected modem, and selected POP3. The following information will be required: our **server address**, our **username**, and our internet account **password** (e.g. the original password given to us by our paid Internet supplier, which was Bigpond). We do not require a second paid email account to set up Sylpheed.

If it is set up as follows, Sylpheed simply downloads emails from our original server when required, and without additional cost, and works well. We can set it up as follows:

1. Double click the Sylpheed icon. The '**Mailbox setting**' box appears.
2. Click a dot beside '**Create mailbox at the following default location: /home/ e.g. tom/Mail**'.
3. Click 'OK'. The '**New account setup**' box appears. Click a dot beside '**POP3**'. The three other choices were 'IMAP4', 'POP3 (Gmail), and 'IMAP4 (Gmail)'.
4. Click 'Forward'. The next '**New account setup**' box appears. Type the name we want to appear on our emails into the '**Display name:**' window, e.g. Jo or Jo Blo.
5. Type our email address into the '**E-mail address:**' window, e.g. our paid email address name.
6. Click 'Forward'. The next '**New account setup**' box appears. Type our paid email address into the '**User ID:**' window.
7. Type **mail.bigpond.com** into the '**POP3 server:**' window (in our case).
8. Type **mail.bigpond.com** into the '**SMTP server:**' window (in our case). Do not click ticks into any of the three tiny boxes.
9. Click 'Forward. The next 'New account setup' box appears. It says 'Your new mail account has been set up with the following settings. If you want to modify the settings, select 'Configuration -

Preferences for current account' or 'Configuration - Edit accounts' in the main menu'. It then displays the following: 'Display name:', 'User ID:', 'POP3 server:', and 'SMTP server'. In our case, the POP3 server is 'mail.bigpond.com:110', and the SMTP server is mail.bigpond.com:25'.

10. Click 'Close'. The 'New account setup' box disappears, and the 'Sylpheed' email client opens.

As previously mentioned, any emails saved are saved in the .eml format. If these emails are transferred to a Windows OS via, e.g. a USB stick, they will open correctly. 'Outlook Express' as well as 'Windows Live Mail' emails downloaded on a Windows OS and copied to Linux Mint will also open correctly in Sylpheed. This is useful, as we have a few old emails we might wish to access.

If we have more than one email client installed, Sylpheed can be set as our Default email client as follows: Right-click on an email stored on, e.g. the Desktop. Place the mouse pointer on 'Open With, then click 'Other Application...'. The 'Open with' box appears. Click on 'Sylpheed' to highlight it, then click 'Set as default' (near the bottom of the box), then click 'OK'. From then on, whenever we double-click on a stored email, Sylpheed will open it.

CLAWS MAIL: Claws Mail can be installed from the Software Manager. In our case we also installed 'claws-mail-pgpmime', 'claws-mail-address-keeper', 'claws-mail-archiver-plugin', and 'claws-mail-doc'. There are additional choices which can be added as required. We can run Claws Mail and Sylpheed on the same computer in Linux without any conflicts, especially as Sylpheed was previously set as the Default email client. If we prefer, we can set up Claws Mail as the default email client instead.

The case ending: Claws Mail emails that are downloaded in Linux, then later transferred by flash drive to a Windows OS, did not open (in the Windows OS), until we typed **.eml** as the case ending to the emails. They then open correctly. Sylpheed emails transferred from a Linux Mint OS to a Windows OS open without this adjustment.

Some history: Claws Mail is a free and open source, GTK+ based email and news client. It configures easily and has a number of choices. The mail is stored in the **MH** mailbox format. Claws Mail can run in both Linux Mint and in some Windows operating systems. It was previously known as Sylpheed-Claws.

The Manual: After Claws Mail is installed, click 'Help', which is located at the top, then click on 'Manual'. The 'The Claws Mail User Manual' screen appears. We can set it up to suit our needs.

Some setup info: When setting up the free account, our moves are determined by our 'Server type'. The three types are 'POP3', 'IMAP', and 'Local mbox file'. For our needs we selected POP3. The following information is requested: our **server address**, our **username**, and our internet account **password**. If we don't enter our password at setup, then we will have to enter it each time we login to it, which makes it more secure. If we already have Sylpheed installed and setup, then when we go to setup Claws Mail, we will be given the option to select the same setup in just a few clicks.

1. Double click the Claws Mail icon. The '**Welcome to Claws Mail**' box appears.
2. Click 'Forward'. The '**About You**' box appears. Type the name we want, into the '**Your Name**:' window, that is, the name we want to appear on our emails. It might be Jo Blo. We will have to delete the name that first appeared there.
3. Type our current email address into the '**Your Email Address:**' window. This is the email address that we had before installing Claws Mail. In our case it is our paid Bigpond email address. We then typed 'Nil' into the '**Your Organization:**' window.
4. Click 'Forward'. The '**Receiving mail**' box appears. Click 'POP3' into the '**Server type:**' window.

5. As our current account is with Bigpond, we typed '**mail.bigpond.com**' into the '**Server address:**' window.
6. We typed our current Bigpond email address into the '**Username:**' window.
7. We typed our current Bigpond email account 'password' into the '**Password:**' window. We did not place ticks in the two tiny boxes, and we did not fill in the 'Client SSL certificate (optional)' windows.
8. Click 'Forward'. The '**Sending mail**' box appears. In our case we typed '**mail.bigpond.com**' into the '**SMTP server address:**' window, and left the remaining tiny boxes and windows blank.
9. Click 'Forward'. The '**Configuration finished**' box appears. It says 'Claws Mail is now ready. Click Save to start'.
10. Click 'Save'. The Claws Mail screen appears and is ready to go.

HIBERNATION (suspend-to-disk). In Linux Mint, Hibernation (suspend-to-disk) is enabled by default. In Ubuntu, it is said to be disabled by default. **We have left it as it is**.

RESETTING THE COMPUTER'S PASSWORD:
Type **sudo passwd** into the Terminal and press 'Enter'.
Type our current password in the Terminal then press 'Enter'. 'Enter new UNIX password:' appears.
Type in our new password then press 'Enter'. 'Retype new UNIX password:' appears.
Retype our new password then press 'Enter'. A message then says ‘password updated successfully’.
We now have a new password. Be sure not to forget it.

CHANGING THE PC’s HOSTNAME AND USER NAME: (**This did not work as expected**).

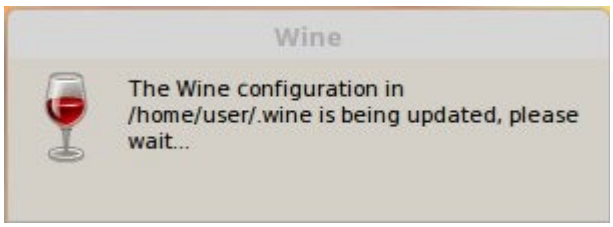
RAR. How to install it: Paste **sudo apt-get install rar** into the Terminal, press Enter, then follow the prompts. It is useful software.

WINE: There is an ever present risk when using WINE, of infecting our files with malware. It is said that this also applies to the derivatives of WINE. However, we can install **WINE** in the Software Manager, e.g. **Wine. Microsoft windows compatibility layer (meta-package)**. When we do, the following automatically install on our 64-bit OS. Note: If we install Linux Mint 32-bit on a 64-bit PC, then the second item below does not install.

Wine 1.6. Microsoft windows compatibility layer (binary emulator and library).
Wine 1.6-amd64. Microsoft windows compatibility layer (64-bit support) (for 64-bit OS).
Wine 1.6-i386. Microsoft windows compatibility layer (32-bit support).

From our list of Windows .exe files that install in WINE, we will select the first one in the list, named ‘**1By1**’, and get it recognized. This will also finalize the setting up of WINE, so it will only have to be finalized once.

We will start by right-clicking on the ‘**1by1_183.exe**’ file (we can start with any of the files in the list). A web search will locate the free file. After right-clicking on it, click ‘**Open With**’ from the drop-box, and then click on ‘**Wine Windows Program Loader**’. A small box appears:



Within seconds, another box appears on top of it as follows:

Click '**Install**'. The following installation box appears:

Another box shortly appears as follows:

Click '**Install**'. The following box appears:

Click '**Next**'. The '1By1' shortcut now appears on the Desktop. When we double-click on the shortcut, the '1By1' program opens. Though WINE is now installed, it is still only version 1.6. However, it does work well in the list of programs in this section. The installation of any Windows compatible .exe files will be simple from this point onwards.

To install the next .exe file we wish to install, first do a web search to download it, right-click in it, then click 'Wine Windows Program Loader'. Now follow the prompts.

SOME WINDOWS SOFTWARE THAT INSTALL IN WINE: Following is a list of the files that were successfully installed in WINE. However, some of them may depend on the computer's hardware. Not all Windows software run in WINE, but those listed below worked. As this is our own list, there are not many Windows programs included.

The following are all **.exe** files: **To install, right-click on the .exe file, then click or navigate to '<u>Wine Windows Program Loader</u>',** then follow the prompts. To play or run the software, click 'Menu', then rest the mouse pointer on 'Wine', and then click on the program's icon we wish to run. Alternatively, create a Folder on the Desktop, then copy and paste the icon shortcuts into it to access them quickly. Anyway, most of the shortcuts automatically appear on the Desktop after installation, and some do not. Whatever appears on the Desktop that is not an icon can be deleted.

1By1 (free): It is an excellent music player. Download and run the '1by1_183.exe' file. Then navigate to the mp3 music folder the first time to play them.
7-Zip File Manager (free). e.g. 7-Zip 4.65 32-bit, or, **7z465.exe**: It works well unzipping files.
Able2Extract Pro v6 (not free).
Carl's Classics 1.5 (<u>not</u> free). About 14-games in one package. Very Good.
ConvertXToDVD 5 (<u>not</u> free). It can burn, e.g., your mp4's to a DVD to play on, e.g., the TV.
Cram Jam (free): By Redclaw. An excellent brain game. Download 'cramjamsetup.exe'.
Crimson Skies 1.0 32-bit Trial (free): It is an aircraft game, and has no time limit on the Trial. We might have to restart the PC after playing it. Download and run 'crimsontrial.exe'.
FastStone MaxView 2.1 (free): Download the 'FSMaxViewSetup21.zip'. Inside the zip file is

'SMaxViewSetup21.exe'. Install the .exe file. An excellent 10/10 viewer.

FastStone Photo Resizer 3.0 (free): Download the 'FSResizerSetup30.zip'. Inside the zip file is 'FSResizerSetup30.exe'. Install the .exe file.

FLV to MP3 Converter (free): Download the ' flvtomp3converter_setup.exe' file and install it.

Free Batch Photo Resizer Portable 2.1 (free): Download & install the 'PhotoResizer.exe' file.

ImgBurn (free): This burning tool works well. Download and run 'SetupImgBurn_2.5.8.0.exe'.

Leadfoot: **Stadium Off-Road Racing Demo 2001** (free): Created by 'Ratbag'. There is no time limit on the demo. Available from the Internet Archive by entering 'Classic PC Games', and 'All Media Types'. It was found under 'L'. Download and run 'leadfoot.exe'.

Microsoft Midtown Madness 2 Trial (free): A car racing game, with no time limit. Download and install 'mm2trial.exe'.

Microsoft Motocross Madness 2 Demo (free): This demo has no time limit. Download and install 'motocxm2.exe'.

Mok v1.4 (free): By MyPlanetSoft. An Anti-Keylogger for Online Banking, etc. Download and run 'mok.exe'. Click 'Open With', then 'Wine Windows Program Loader'. Mok does not install, but runs as a portable program. Close immediately after using it to protect our passwords. It may be available from 'myplanetsoft.com/help/mok'.

Neo's SafeKeys v3.1.4 (free): An Anti-Keylogger for Online Banking. Gizmo rates it at 5-5. Download and install 'Neos-SafeKeys-v3-1-4-Setup.exe'. It may be available from the following site: 'Neo-s-SafeKeys/3000-2144_4-75833719.html'.

Pretty Good Solitaire (free): There are about 500 games included. Download and install 'gdsol500.exe'. Some versions have been changed, so look for an original file. We rate it highly.

Resistor Colour Code Solver Portable 1.3.1. (free): Download and install the following file: 'Resistor Colour Code Solver.exe'.

The Sage English Dictionary and Thesaurus Portable (free):

Tick5Portable (free). Download and install 'Tick5Portable.exe'.

TTTCube 3.4b (free): Download 'TTTSetup.zip'. Install 'TTTSetup.exe'.

Virtual Painter 5 (not free). It can convert our photos to what appears to be paintings.

WinDjView v2.0.2 (free). Download and install 'WinDjView-2.0.2-Setup.exe'. It may be available from **sourceforge.net/projects/windjview/files/WinDjView/2.0.2/**. This is an executable file which installs the full file. (*Okular also works well, which is Linux software)*.

Ywriter 5 (free): yWriter is a free word processor that breaks projects into chapters and scenes. Though it is free, we are encouraged to register it. Download and install 'yWriter5Full.exe'.

Also:

Outlook Express 6 (paid): Outlook Express for Windows 7, 8, 8.1 and 10. This is an unofficial version of Outlook Express, extracted from Windows XP and modified. If interested, go to: **http://runasxp.com/Thread**-OE-for-**windows-7-8**-and-**10**. When installed, it is said to automatically run in WINE. Do your own research.

LOCATING THE PROGRAM FOLDERS IN WINE.1: Start by clicking on 'Menu', then go into the 'Wine' section and click '**Browse C: Drive**', which is located at the top of that section. Double-click on the '**Program Files (x86)**' folder. The previously list of software for Windows systems will appear here in their respective folders (if they were installed).

LOCATING THE PROGRAM FOLDERS IN WINE.2: Another way to locate the 'Program Files (x86)' folder is as follows: Open the 'Home' folder (on the Desktop), right-click on any empty space inside the 'Home' folder, then click 'Show Hidden Files'. A number of extra folders appear. The '.**wine**' folder is usually the last folder inside in the Home folder.

Double-click on the '.**wine**' folder to open it, then double-click on the '**dosdevices**' folder. Double-click on the '**C**:' folder, then double-click on the '**Program Files (x86)**' folder. Any installed Windows software will appear there.

To return the ‘Home’ folder to its’ previous state, right-click on any empty space in the Home folder, then click on 'Show Hidden Files' once again.

UNINSTALLING PROGRAMS IN WINE:
Click '**menu**' on the Desktop, go into the 'Wine' section then click '**Uninstall Wine Software**', located towards the bottom. The ‘**Add/Remove Programs**’ box appears. Now follow the prompts. If this is not successful, we can right-click on the program in WINE that we wish to remove, click 'Uninstall', then follow the prompts. It is best to remove any associated files that are left over in this section afterwards, so as not to clutter it up.

Once a program is uninstalled from the Wine section, its’ install folder often remains in the 'Program Files (x86)' folder. To remedy this, go into that section and delete the leftover folder. Do **not** delete the 'Program Files' folder.

Some software can be uninstalled from the 'Program Files (x86)' folder by right-clicking on its 'uninstall' file (if it has one), clicking 'Open With', and then 'Wine Windows Program loader'. Wine will then run the uninstall of the program. However, it may be best to use the first method.

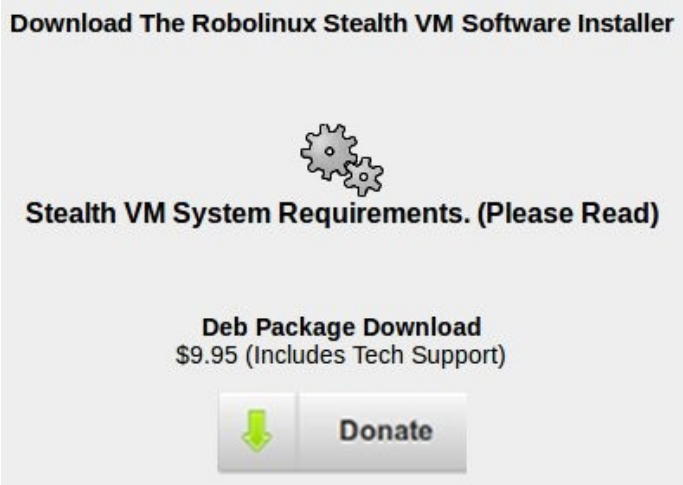
MONO: **It may be best not to remove Mono**. Mono comes installed by default, but is said to be a security risk, as it offers the applications that run in Windows systems a limited opportunity to run in Linux, which may also unintentionally include malicious software.

INSTALLING ROBOLINUX: if installing Windows in a virtual machine, one way is to locate it within ‘Robolinux Stealth VM for Linux Mint’. Robolinux can run Windows XP, Windows 7, and Windows 10 (all in either 32-bit or 64-bit), in computer systems that have either 32-bit or 64-bit CPU’s. Once installed, ‘Oracle VM VirtualBox’ runs the Windows systems from within a secure partition. Robolinux runs on a variety of Linux systems, and can be purchased from the following web address: **https://www.robolinux.org/**. We will now begin by opening its’ web page.

When the page opens, find ‘**download for**’ (located near the top right-side of the page), then click on ‘**Linux Mint**’ (just beneath it):

Another web page then opens. Click on ‘**Robolinux Stealth VM Software Download**’ towards the bottom of the page:

A new page opens. Click on '**Donate**' towards the bottom of the page, which is just beneath 'Deb Package Download $9.95 (Includes Tech Support)'. The 'robolinux-stealth-vm-software.deb' installation file will be very small:



A new page appears, enabling us to pay by PayPal, Debit or Credit Card. Now follow the prompts. As a point of interest, the updated US dollars were $10.65, and the Australian dollars were $14.06, as of 13.08.2017. However, it was money well spent. A short while after we clicked the '**Pay Now**' button, **the following screen comprising print appeared**:

- Click here to download **The Robolinux Stealth VM Software for Linux Mint. $9.95 Donation + .70 cents Paypal fee**.

  Thank you for your kind donation to Robolinux. Simply install the downloaded Deb Package file as you would any normal Software Program in Linux Mint.

  HINT: After you click on the download button then your Deb installer file will be in your Downloads folder.

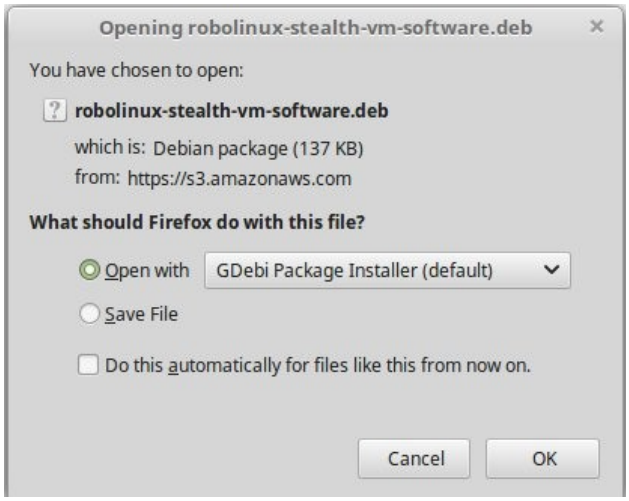
  After you have completed your installation here is how you install any Windows XP or 7 VM into Linux Mint.

  http://www.robolinux.org/lm/faq/one-click-vm-install

  Warm Regards,

  John Martinson
  Founder
  Robolinux

After clicking on 'Click here' (in the above window), the following box appeared:

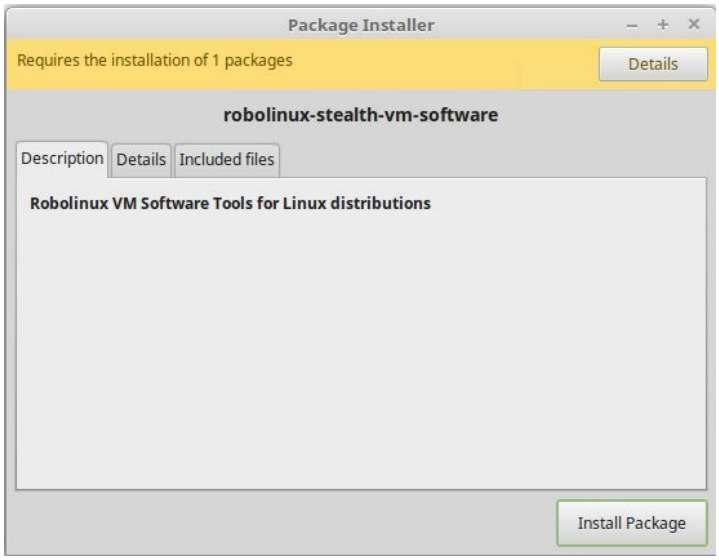


Click a dot beside '**Save File**', and then click '**OK**'.

We can now navigate to the downloaded, but not yet installed '.deb' package. To do so, locate the down arrow, near the top-right side of the Firefox Web Browser page, e.g.

Click on the down arrow, and then click on the tiny black box, located on the right side of 'robolinux-stealth-vm-software.deb'. When we do so, a window opens containing the following .deb package:

Double-click on the .deb package to start the installation process. The following box then appears:



Click on '**Install Package**' located at the bottom right side of the box. A new box appears named '**You need to grant administrative rights to install software**'. Enter our normal **Log-in Password**, then click '**OK**'.

When the installation has completed, the following box appears:

Click '**Close**' to finalize the installation of RoboLinux. The following shortcuts can now be found by clicking on '**Menu**', then '**All Applications**' from the pop-up. They are:

1. Robolinux Website.
2. Robolinux VirtualBox Installer.
3a. Windows XP (32) VM Installer.
3b. Windows XP (64) VM Installer.
3c. Windows 7 (32) VM Installer.
3d. Windows 7 (64) VM Installer.
3e. Windows 10 (32) VM Installer.
3f. Windows 10 (64) VM Installer.
4a. Backup your Windows Virtual Machine.
4b. Restore your Windows Virtual Machine.
4c. Restore Shared Windows VM Data Folder.
5a. Turn ON The Robolinux VM Data Sync Control.
5b. Turn OFF The Robolinux VM Data Sync Control.

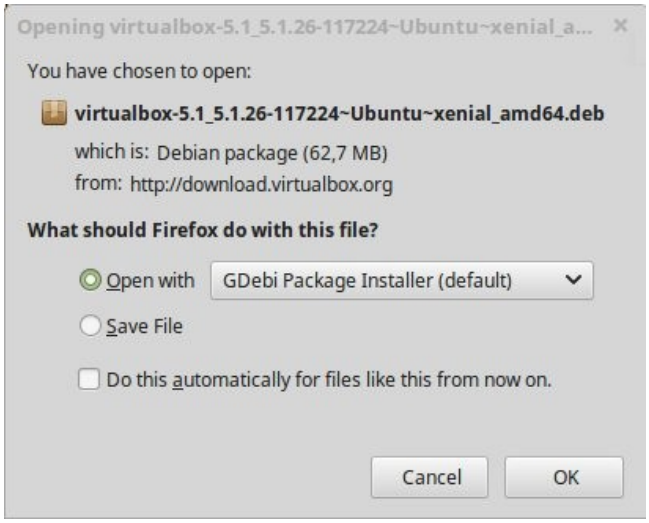
We can nowinstall any of the above Windows Operating Systems within the Robolinux secure partition when ready to do so. I prefer to install Windows XP. However, each to their own.

INSTALLING VIRTUALBOX IN ROBOLINUX. Now that we have installed RoboLinux, it is time to install 'Oracle VM VirtualBox'. Click on 'Menu' on the Desktop, then click on '**2. Robolinux VirtualBox Installer**',from the pop-up. The following web page appears:

continued...

Click on '**Click here to download Oracle VirtualBox for your version of Linux**'. When we do, the following page appears:

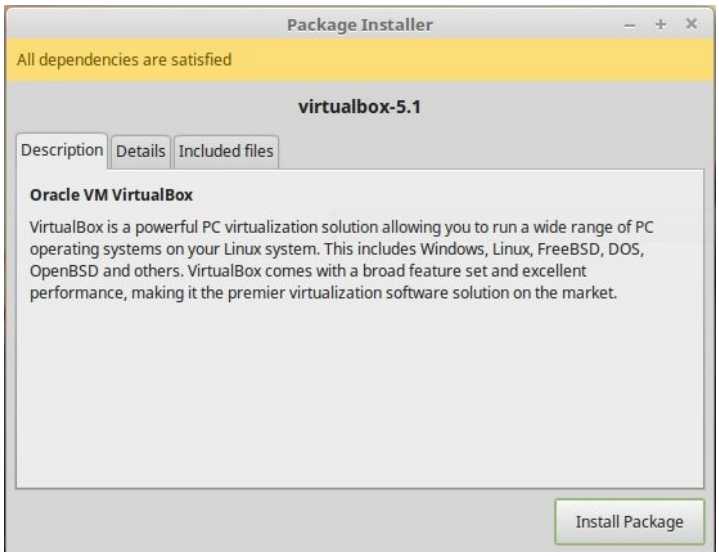
We can now navigate the list on the above web page to select the version of Ubuntu that 'Linux Mint 18.2 (64-bit) Sonya Cinnamon' is based on. As our version of Linux Mint is based on Ubuntu 16.04, we will navigate to '**Ubuntu 16.04 ("Xenial") AMD64**', and then click on '**AMD64**'. After clicking on it, the following box appears:



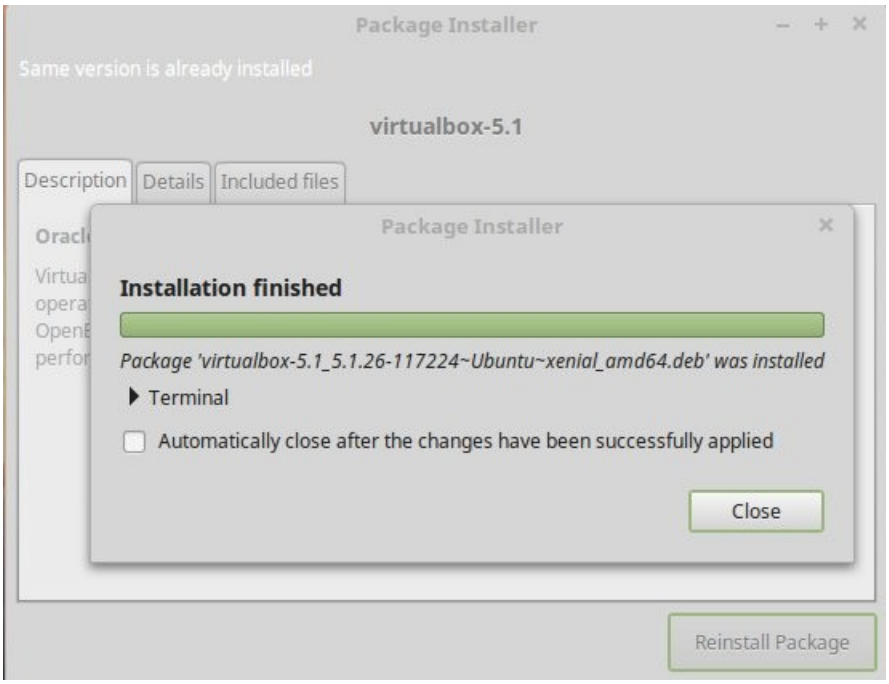
Click a dot beside ‘Save File’, then click ‘OK’. The file will now download to the ‘Downloads’ folder located within the ‘Home’ folder. It will also be accessible if we click the down arrow at the top-right side of the Web page, and then click the black dot to access the .deb package.

Double-click on the ‘**virtualbox-5.1_5.1.26-117224~Ubuntu~xenial_amd64**’ .deb package as shown below to open it.

After double-clicking on it, the following Package Installer box appears:



Click ‘Install Package’. Another box appears. It says ‘You need to grant administrative rights to install software’. Enter our Login ‘**Password**’, then click ‘**OK**’. The package will now start the install process.



When the installation has completed, click ‘Close’. An option to reinstall the package appears. If there were no problems, just click ‘Close’. The box will then disappear.

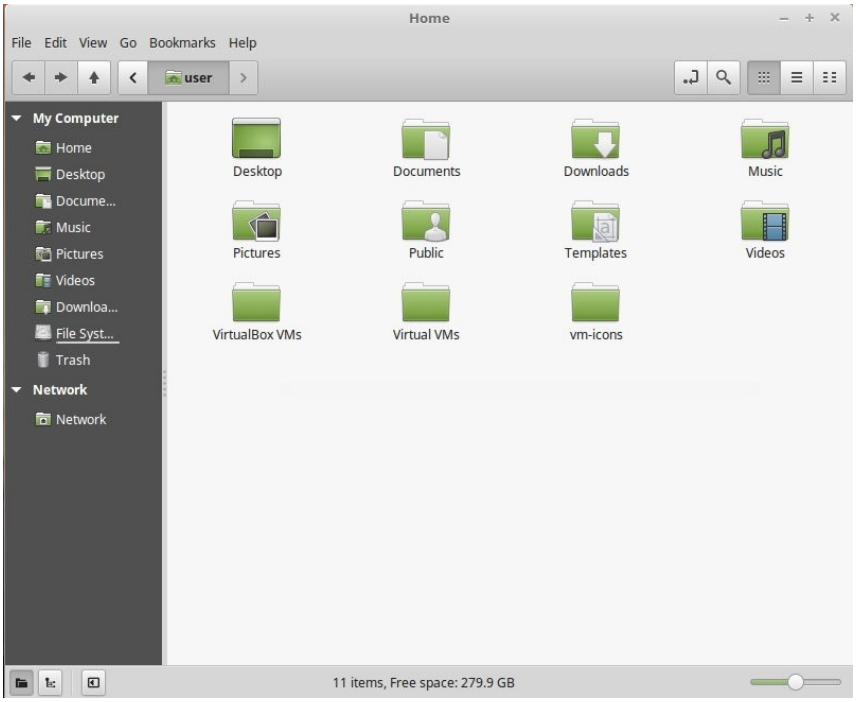
To locate the installed file’s shortcut, click on ‘**Menu**’, click on ‘**All Applications**’, then navigate down to ‘**Oracle VM VirtualBox**’. We have just installed version ‘**5.1.26 r117224 (Qt5.5.1)**’. When we type VirtualBox into the Software Manager, the following is shown to be installed: Virtualbox-5.1.

The SHA256 checksum of the above package is:
dc389f54ed810eb432cb2d2aee7390df88dfb64eeb163482fd9e903a49911fd6 *virtualbox-5.1_5.1.26-117224~Ubuntu~xenial_amd64.deb.

A following quote: **Please note that every driver you need will be installed by the Oracle Guest Additions in virtualbox. You do not need to use or install any other drivers**.

As we have just finished setting up Robolinux and VirtualBox, we can install the Windows Operating System when ready. Before doing so, we will first look in the ‘Home’ Folder located on the Desktop, to see what changes have occurred there.

continued...



In the 'Home' Folder there are now three extra sub-folders. The first is '**VirtualBox Vms**', the second is '**Virtual VMs**', and the third is '**vm-icons**'. (After we click on and complete '4a. Backup your Windows Virtual Machine', then another folder will appear, named '**vm-backup**').

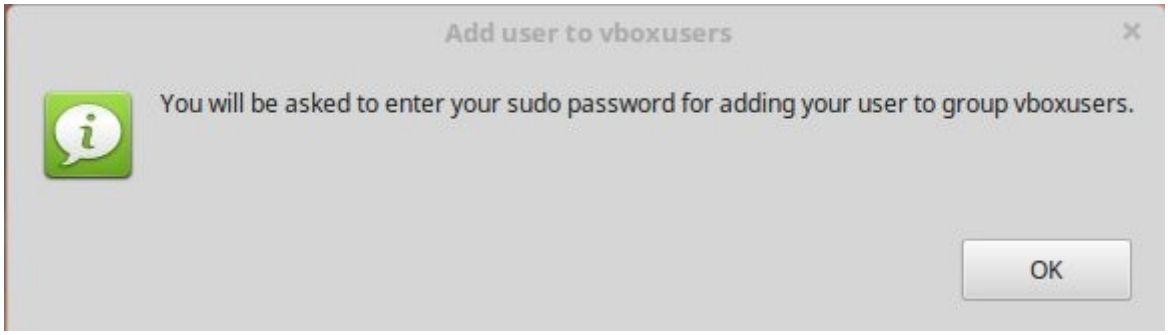
INSTALLING WINDOWS IN ROBOLINUX: If we wish to set up, e.g. Windows XP Pro 32-bit, then click on '**3a. Windows XP (32) VM Installer**'. The 'Robolinux XP 32 Bit Virtual Machine Installer' box appears. It says:

Robolinux XP 32 Bit Virtual Machine Installer

This Windows XP 32 bit VM installer will automatically build and configure a virtual machine for your Windows 32 bit Home or Pro version in less than 30 seconds. After this VM installation has finished you need to load your Microsoft licensed Windows XP 32 bit disk into your CD or DVD drive and load VirtualBox which you can find in your software applications inside Linux. Then click on the top green right arrow start button to load your Windows XP install disk. You will then see the Microsoft XP installation menu. Now you can simply install XP normally. Please note that every driver you need will be installed by the Oracle Guest Additions in virtualbox. You do not need to use or install any other drivers. Then after XP has installed, the next time you load virtualbox and click the top green right arrow start button, Windows XP will startup and run. Be sure to always save your data to drive e and not drive c. This is one of the secrets to being 100 percent immune to all viruses and malware with any version of Windows running inside Linux. Drive e is the Linux partition. Please be sure to read the FAQS which provide you with instructions on how to install the required Oracle guest additions and also shows you how to backup and restore your Windows virtual machine and your VM Data. The VM restore function provides you with a fresh new installed copy of your Windows virtual machine anytime you want it. For example use the restore option when your Windows registry slows down. Enjoy your virus and malware free life.

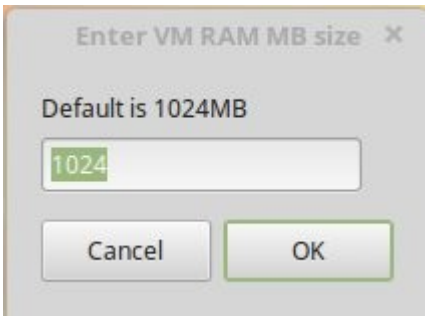
Please press enter to continue.

Click '**Yes**' to continue. The following box then appears:



Click '**OK**'. The following box then appears:

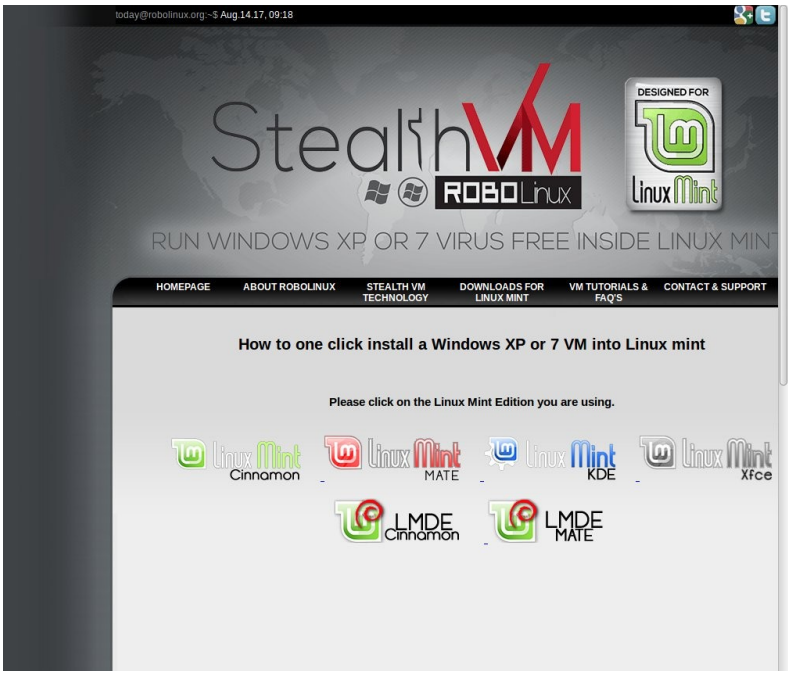
Enter our system bootup Password, and then click '**OK**'. A box temporarily appears, and then the following box appears:



1024MB is the default allocation for running the Windows Virtual Machine. This allocation can be changed now, or within VirtualBox at a later date if necessary. (**RoboLinux quote: If your PC or laptop has 3GB of RAM, then type 2048 in this dialogue box, which will leave 1GB for Linux Mint to run in. The default RAM is 1024**). Click '**OK**'.

A Robolinux Web Page shortly appears (below). It allows us to select the Linux Mint Edition that we were installing Robolinux in. As our version of Linux Mint is 'Cinnamon', then: Click on '**Linux Mint Cinnamon**'.

continued...



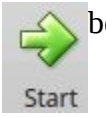
Another Web Page appears as follows:

It says: 'How to one click install a Windows XP or 7 VM in Linux Mint Cinnamon'. Read this Web Page through carefully. Navigate down the page, and click on '**Click here to see the FAQ**'. A new web page opens, named '**How to load your Microsoft Windows licensed disk into your virtual machine**'. It might be useful to save this page for reference to it later on.

We will now install e.g. the Windows XP 32-bit licensed OS. Insert the Windows XP installation disk into the computer's CD / DVD drive. A box appears that says: '**You have just inserted a**

medium. Choose what application to launch’. Click the down arrow, click ‘**Do Nothing**’, and then Click ‘**OK**’. The box then disappears.

Click ‘**Menu**’ on the Desktop, click ‘**All Applications**’ from the pop-up, then navigate down to ‘**Oracle VM VirtualBox**’, then click on it to open it. The’Oracle VM VirtualBox Manager’ box then appears.

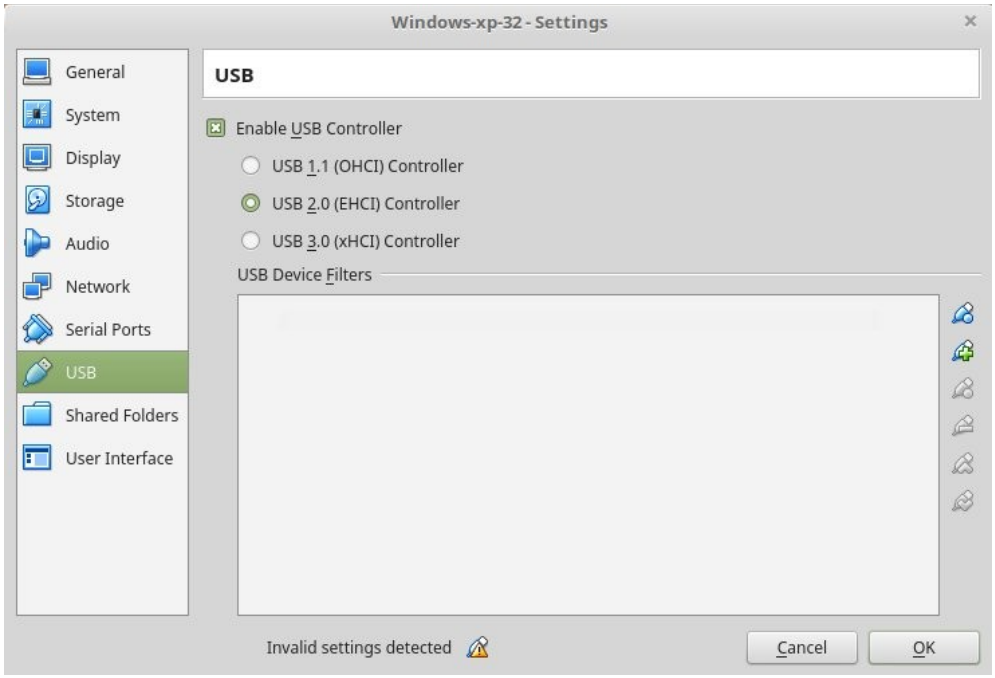
Click on the green arrow in the above box to 

begin the Windows XP installation process.

If the following box appears, re-open the ‘Oracle VM VirtualBox Manager’.

Now navigate down to ‘USB’ and click on it. The following box then appears:

continued...



Leave 'Enable USB Controller' selected, and click a dot beside '**USB 1.1 (OHCI) Controller**', and then click '**OK**'. We will then return to the 'Oracle VM VirtualBox Manager' box.

Once again click on the green arrow near the top left of that box to restart the installation of Windows XP. Now all that is necessary is to follow the prompts to install Windows XP from its' installation disc.

Now continue the Windows XP installation process, by following the prompts. Important: After installing Windows, there are some things that must be done straight away. These things are listed in the next section.

AFTER INSTALLING WINDOWS IN ROBOLINUX. One to four below contain some details re the four sub-folders in the 'Home' Folder after the Windows installation has completed:

1. 'VirtualBox Vms' will contain data that is only relevant to the computer that the 'Robolinux Stealth VM Software Download' is installed in. It is not the OS.

2. 'Virtual VMs' contains e.g., the complete Windows XP Virtual Machine. It will appear in this folder as, e.g: **Microsoft_XP_Pro.vdi**. It is advisable to copy and paste this .vdi file to an external HDD, as it can be pasted into the same location in another PC, should the first one fail. Should this occur, we will still have to purchase RoboLinux to run the .vdi file in, but will not have to remake the .vdi file.

3. 'vm-backup' will also contain a copy of the '**Microsoft_XP_Pro.vdi**' file, but only after we have done the following: Click 'Menu' on the Desktop, and then click on '4a. Backup Your Windows Virtual Machine', which is located in the pop-up. The backup may take a while, depending on the size of the Windows OS and its installed programs. If it does not backup to that folder, then copy and paste it there (as stated, it is already in the 'Virtual Vms' folder).

4. 'vm-icons' contains the Windows Desktop icons for the OS in question, e.g. 'Windows7.png', and 'xp.png', etc.

After installing a Windows OS within Robolinux, open it and:
1. **Disable** 'Windows Updates'.
2. **Disable** 'System Restore'.
3. Do **not** install an antivirus.
4. Do **not** install any security software.
5. Do **not** defrag Windows.
6. Leave the 'Firewall' **on**.
7. Do **not** store data on the Windows VM Desktop.
8. Store **all data** in the '**vboxsrv' (E:)** shortcut (located on the Windows VM Desktop).

If the above do's and dont's are not adhered to, then the size of the Windows OS within Robolinux will grow out of all proportion in size, as it would, even if not installed in RoboLinux.

If an infection or an error should ever occur (which we have never encountered), simply click on '4b. Restore your Windows Virtual Machine' (visible in Linux when Menu is clicked), and it will be restored to its' previous VM backup status, that is, to the last backup that was made (if one was made). Even though we installed a lot of programs in XP VM within Robolinux, it still ran fast, and booted up in about twelve seconds or so each time, ready to run.

Once the Windows OS is installed within RoboLinux, the **'vboxsrv' (E:) Drive** appears as a shortcut on the Windows VM Desktop. It allows access between Linux and Windows, to and fro. The data in this partition is also accessible in the Host machine's **Home** folder/ **Documents** Folder/ **chessdata** folder. The identical data is accessible in both the Host and the Guest machine. The Host machine in this case is Linux Mint 18.2 Cinnamon Sonya 64-bit.

Read the Robolinux Documentation, which can also be purchased from their website.

If we decide not to use Robolinux, we can still run Windows in 'VirtualBox', though the usual security software would be required for the various OS's. An Antivirus would have to be installed, and Windows Update would have to be switched on. As a further security precaution, we can save a copy of the VM's OS to an external HDD. Please note that Windows XP is no longer supported with all of the Security Updates, and its' Web Browser may no longer be supported, so it would be risky to go this way. However, as previously stated, RoboLibux runs XP securely.

GRUB CUSTOMIZER: Grub stands for 'Grand Unified Bootloader'. It boots various types of operating systems, including Linux, Windows, Apple, etc., so it is necessary to the system. If Linux is installed first and Windows second, then the Grub Customizer is lost, so do it the other way. Grub comes in two parts. The first part is the 'MBR', or the Master Boot Record, which is the first sector of the hard disk. The second part is the 'boot menu', which is for the different operating systems.

LAPTOPS. IMPROVING BATTERY LIFE: The following Terminal commands may improve the battery life of Laptops, as well as reducing some of the overheating. TLP is a power management tool to help achieve this. No configuration is required. To install it, paste the first line into the Terminal, press 'Enter' then follow the prompts. When completed, go to the next line and do the same, and so on.

sudo add-apt-repository ppa:linrunner/tlp
sudo apt-get update
sudo apt-get install tlp tlp-rdw
sudo tlp start

USB STICK FORMATTER: To format a flash stick, first insert it into the computer's USB connection, then close any window that opens. Next open the '**USB Stick Formatter**' program, which is downloadable in the Software Manager. In the 'Format:' window, click the drop-box to make the flash drive's name appear. Now click on its' name to stop its' name from disappearing.

Click the drop-box in the second window. The formatting choices are 'FAT32', 'NTFS', and 'EXT4'. In this case we will choose '**FAT32**'. Click 'Format'. A box appears which says 'This will destroy all data on the target device, are you sure you want to proceed?' Enter the computer's password, then click 'Authenticate'. Presently a small box appears which says 'The USB stick was formatted successfully'. Click 'OK', then cancel out of the box. Once done, remove the flash drive.

FORMATTING A HDD FOR LINUX WITH GPARTED: GParted is available to download in the Software Manager, and is fast to navigate once installed.

We will now format, e.g., an external **250GB** HDD, which in this case will be connected to the computer via a USB Docker. The one we have used for some time is named '**ALL IN 1 HDD Docking**' with SATA USB2.0/ 3.0 capability. A web search will list others as well. This particular 250GB HDD will appear as **232.88/ 89 GiB** in size. Once the drive is formatted, it can then be mounted inside a computer in preparation for installing Linux Mint to it.

GParted can format an entire drive (as follows), or it can partition the drive instead. When we install Linux Mint, as it automatically installs to the entire drive, then we have no need to create partitions. The use of partitions is useful e.g. in a Windows OS, as Windows can install to one partition, and store date to the second one.

01. Connect the Docker (with the HDD inserted) to the computer, then switch it on.
02. Open the GParted program, and enter the computer's password when requested. The GParted screen appears, listing the computer's 'ext4', 'extended', and the 'linux-swap' file systems. *The external USB connected HDD will not be listed at this early stage, unless it has been previously formatted.*
03. Click on '**GParted**', located at the top-left side of the GParted screen. A drop-box appears.
04. Rest the mouse on '**Devices**' (located in the drop-box), then slide the mouse to the right in the window and click on the USB connected HDD (be careful not to click on the wrong one). In our case it was '**/dev/sdc (232.89 GiB)**'. A window now appears near the top of the GParted screen, and '*/dev/sdc1 232.88 GiB*' appears in it. If the external HDD has previously been formatted, then a solid green line will surround that window. If it has not been previously formatted, it will then say '*Unallocated 232.88 GiB*', and will be outlined with dots.
05. *If the external HDD has previously been formatted, then it will have to be 'unmounted' before it can be re-formatted. To unmount it, right-click in the window named '/dev/sdc1 232.88 GiB', then click '**Unmount**' from the drop-box. If 'Unmount' does not appear there, then click within the dotted lines to close the drop-box. The solid green line around this box is then replaced with a dotted line. We can now proceed to format this external HDD.*
06. Click '**Device**' at the top of the GParted screen. A small drop-box appears.
07. Click '**Create Partition Table...**' from the drop-box. A message says: 'WARNING: This will ERASE ALL DATA on the ENTIRE DISK /dev/sdc'.
08. In this case we left '**msdos**' into the 'Select new partition table type' window.
09. Click '**Apply**'. The above warning message soon disappears, and 'unallocated 232.89 GiB' appears in the top window. This window is grey, and it is outlined with dots. We can now partition the external HDD the way we want it.
10. Click '**Partition**' at the top of the GParted screen. A drop-box appears.
11. Click '**New**' from the drop-box. A 'Create new Partition' box appears. We can now enter the information we want into this box. As we are only formatting the external HDD and not creating

a partition, then leave the full HDD size there, in this case 238474 in the '**New size (MiB)**' **Window. NOTE**: As there are 1024kb to one Megabyte, then 238474 divided by 1024 equals 232.88GB (which is our 250GB HDD).
12. Click e.g. '**Primary Partition**' into the 'Create as:' window.
13. Now select the type of file system we want. Linux uses ext2, ext3, and ext4. However, it also recognizes fat16, fat32, jfs, linux-swap, lvm2 pv, ntfs, reiserfs, xfs, cleared, and unformatted. Click '**ntfs**' into the 'File system:' window. All remaining windows are left as they are. (Later on, when Linux is installed to this HDD, then ntfs will be automatically replaced with ext4).
14. Click the '**Add**' button in this box. The '/dev/sdc - GParted' screen changes. The large window now says 'New Partition #1 232.88 GiB', and is outlined by a solid green line. '1 operation pending' appears at the bottom left.
15. Click in the area outlined in green to apply our selections and begin the process. The following now appears towards the bottom of the GParted screen: 'Create Primary Partition #1 (ntfs, 232.88 GiB) on /dev/sdc'.
16. To proceed with '1 operation pending', click '**Edit**' at the top of the '/dev/sdc - GParted' screen. A drop-box appears.
17. Click '**Apply All Operations**' from the drop-box. The 'Apply operations to device' box appears. It says 'Are you sure you want to apply the pending operations?'
18. Click '**Apply**'. The 'Applying pending operations' box appears. It says 'Depending on the number and type of operations this might take a long time'. In the 'Completed Operations' window it says 'All operations successfully completed'.
19. Click '**Close**'. **Note**: As soon as we click 'Close', the formatting of the external HDD starts, and quickly finishes. The '/dev/sdc - GParted' screen now says '/dev/sdc1 232.88 GiB' in the top window, which is outlined with a heavy green line. At the very bottom left of the screen, it says '0 operations pending'. This means that the formatting of the HDD is complete.

VIDEO CLIPS, VIEWING OR DOWNLOADING THEM. ClipGrab is a very good video downloader, and can handle a variety of file types and convert them to mp4. One of the current sources of videos is **YouTube**, though it may not always be accessible without a Chromebook. Two other popular sources are: **Vimeo** located at **https://vimeo.com/,** and **DailyMotion** located at **www.dailymotion.com/us**.

Another good choice is one that uses its' own downloader, e.g. **TED**, which can be located at the following address, e.g. **https://www.ted.com/**.

With **Vimeo** we can 'Find a plan', or 'Join free'. One way to copy a Vimeo video is to right click on the video shortcut on the main page, then from the drop-box, left-click on 'Copy Link Location', then paste the link into 'ClipGrab. The video will be saved as an mp4. Instead of downloading Vimeos videos, they may be best viewed online. It is important not to infringe copyright.

With **Dailymotion**, there is a 'SIGN IN' near the top right of their page. One way to copy a Dailymotion video is to right click on the video shortcut on the main page, then from the drop-box, left-click on 'Copy Link Location', then paste the link into 'ClipGrab. The video will be saved as an mp4. Instead of downloading Dailymotion videos, they may be best viewed online. It is important not to infringe copyright.

With **TED**, there is a 'LOG IN' near the top right of their page. One way to copy a TED video: After locating the video's shortcut (on the main screen), left-click on the shortcut to take us to the video in question, then click on 'Download', located in the movie screen. The 'Download this talk' box then appears. The file can usually be downloaded as either an **mp3** or as an **mp4**. In this case, we will click on 'Download video'. At this point, **(either the Firefox Web Browser downloader box appears**), a new screen appears, in which case we can right-click on it, then click on 'Save

Video As...', and then direct the download to the location of our choice, e.g. the Desktop. Now wait until the mp4 video appears on, e.g., the Desktop. (**If the Firefox Web Browser downloader box appears as previously mentioned, click on 'Save File', then 'OK'. The file will be saved in the 'Home' Folder, in the 'Downloads' Folder**). Instead of downloading TED videos, they may be best viewed online. It is important not to infringe copyright.

To install ClipGrab via the Terminal, copy and paste the first **coloured** line below into the Terminal, press 'Enter' on the keyboard, enter our 'Password', then follow the prompts. When line one is installed, copy and paste line two into the 'Terminal', then press 'Enter'. When line two is installed, proceed to line three and do the same. ClipGrab should now be installed.

sudo add-apt-repository ppa:clipgrab-team/ppa
sudo apt-get update
sudo apt-get install clipgrab

To remove ClipGrab via the **Terminal**, copy and finalize each of the following **yellow** lines in turn.

apt-get remove clipgrab
sudo add-apt-repository --remove ppa:clipgrab-team/ppa

Whem we first installed ClipGrab through the Terminal, we got Version 3.6.3. However, on the 23rd March 2017, it automatically updated to Version 3.6.4 whilst using the Update Manager. (The first installation seems to be best through the Terminal, and thereafter through the Update Manager). It is best to always have the latest version of ClipGrab to avoid any download problems.

VIDEO TO MP3 CONVERSION. First install '**SoundKonverter**' and '**easyMP3Gain**' from the Software Manager. Run SoundKonverter, then navigate to a previously downloaded legal e.g. mp4 file we wish to convert to an mp3 file. Once converted, the file will be saved to the Home folder in the soundKonverter sub-folder. If a number of mp3's have been converted from e.g. flv's, and we wish to burn them to a CD, it is a good idea to make them play at a similar volume, otherwise one might be loud while the next one might be soft. This is where easyMP3Gain comes in. It can adjust a number of mp3's in a folder to a similar volume before burning them to CD. 'Out of copyright' music can be downloaded on the Internet. One location is said to be the 'Internet Archive'.

DEFRAGGING. As **ext4** is the default file system for Linux Mint, then fragmentation does not often occur, and as the management system used by Linux Mint is 'dpkg', then we inherit the 'apt-get' system in the Terminal. For example, if we want to remove packages that are no longer needed and are cluttering up the system, simply copy and paste **sudo apt-get autoremove** into the Terminal, enter the Password, then press 'Enter'. We can also copy and paste **sudo apt-get autoclean** into the Terminal to clear the local repository of retrieved packages that are mostly useless.

As Linux systems spread installed files all over the HDD with considerable free space surrounding them, this allows most files to grow without being split into fragments. Consequently, we don't have to worry about fragmentation until about 80% or more of the drive is filled with installed files and data. Anyway, If a problem should occur, the file system attempts to move any files around to reduce fragmentation.

If we are experiencing problems with fragmentation, then it may be time to get a bigger Hard Drive. On the other hand, we could do the following: First copy and paste (not cut and paste) all of our data to an external HDD. Once our data is successfully transferred, we can then delete all our data from the computer's hard drive. Next copy and paste (not cut and paste) all our data back to our

computer's drive from the external HDD. This should remove any fragmentation.

KINDLE. One way to read Kindle eBooks is in the **Cloud**, and is a method that works well. First go to **www.amazon.com/CloudReader** to register. We can then enter our email address and password in the 'kindle cloud reader' page to read those we have paid for, as well as free Kindle eBooks.

Another option for Kindle eBooks is as follows: First install RoboLinux (Oracle VM VirtualBox should install with it), then install e.g. 'Windows XP' within VirtualBox. How to do this is in the section named '**Virtual Machines and Robolinux**', elsewhere in this document. We can then install Kindle in a Windows operating system. We have had no problems reading Kindle eBooks using this method.

BACKUP WITH APTonCD. To backupup the computer's installed packages, we must first install 'APTonCD', using the Software Manager. Once installed, APTonCD can back up the computer's packages to a folder in the Home Folder, while further moves within ApTonCD can backup the packages to a DVD as an image. The backup can then be restored to the computer, if its' files become damaged. Alternatively, any files within the image can be restored individually. It is always best to install or reinstall files using the Software Manager, though it could be useful to have a DVD on standby just in case.

FULL BACKUP & RESTORE WITH 'REDO BACKUP & RECOVERY':
Redo v.1.0.4 is a free backup and restore tool for both **Linux and Windows**:

In this example, Linux Mint 18.2 Sonya Cinnamon (64-bit) was recently installed on a computer with a 500GB HDD, after which about 111 other programs were also installed. The reason for the 500GB drive was to create an image that could easily be installed on any larger size drives on the same, or another computer. The created image will not install to smaller C: drives.

First install '**Partclone**' from the Software Manager before creating the image. Partclone is a utility to clone & restore partitions. Once installed, locate the 'Redo' web page and download the free '**Redo v.1.0.4**' ISO (or later if available), which is about 261.5MB in size, then burn it to a DVD as an active ISO. 'Redo Backup and Recovery' is a front-end for 'Partclone', which does the actual backup and restore. In Linux, the 'Brasero', 'K3b' or 'xfburn' software are good choices to create an active ISO.

As stated, the size of the computer's HDD for this test was 500GB, and the size of the external HDD that the image was to be backed-up to was 500GB. However, the external HDD could have been much **larger or smaller**, as the backed up and compressed image of the 500GB HDD turned out to be much smaller in size.

If using a new external HDD to store (not install) the image on, then format it to NTFS with GParted before proceeding. It will then store the image in its' own folder on that drive. Our external HDD was already in the **ntfs** format, and the image was stored on it without any problems.

If wanting a flawless image, then create it soon after installing the OS together with all of the additional software required. It is best not to wait days or months before doing so, in case the computers' system might become compromised for one reason or another.

Note: In the following, the external hdd is referred to as **Drive 3,** though it may sometimes be referred to as **Drive 2**. Our old Docker was identified as **Drive 3,** and our new docker is identified as **Drive 2**. For convenience, we will highlight Drive 3 as a reminder that it could be either.

Creating an image of our computer's 500GB Drive.
We will now create an image of our Linux Mint 18.2 Sonya Cinnamon 64-bit 500GB HDD. A 64-bit image is noticably larger than a 32-bit image. A 32-bit image will suit some older computers.

01. Start the computer.
02. Insert the active Redo ISO DVD into the computer's drive.
03. Cancel any box that appears.
04. Turn the computer off (fully).
05. Plug in the external HDD that we wish to store the image to, then switch the external HDD on (if it has a switch). The external HDD drive can have a mixture of data on it.
06. Push the computers' start button, then quickly and often **press F12** on the keyboard until a response occurs. Sometimes it is best not to press F12 until the monitor flickers.
07. The 'Boot Device Menu' box appears. There are a number of options. Click on '**Onboard or USB CD-ROM Drive**' to highlight it, then click 'Enter' on the keyboard.
08. The 'Redo Backup & Recovery' screen appears. There are some choices. The first four are 'Start Redo Backup', 'Safe Mode', 'Check CD for Defects', and 'Memory Test'. As '**Start Redo Backup**' is already highlighted, just click '**Enter**' on the Keyboard.
09. After a few minutes or so the 'Welcome - Select an Option' screen appears. It says 'Easily create a backup image of your Computer, or completely restore from one. Click an option to begin'. There are two options, 'Backup' and 'Restore'. Click on '**Backup**'.
10. The 'Backup - **Step 1**: Select source drive' screen appears. It says 'Click on the box below to select the source drive that we would like to create a backup image from'. We selected '**Drive 1 (465.76GB): WDC WD5000AAKS-0 (Linux Mint 18.2 Sonya (18.2), 457.89GB EXT4) (7.87GB SWAP)**. This is the size of this computers' drive, e.g. 500GB, and not what is on it. Two other choices were available by clicking the arrow beside the window. These other choices were '**Drive 3 (465.76GB): 00AADS-00S9B0 (465.76GB NTFS)**' e.g. the 500GB external drive we will back up (not install) the image to, and '**Drive 19 (249.37MB): DRW-24D5MT**'. Do not select any of these last two. Click '**Next**'.
11. The '**Step 2**: Select Partitions to Save' screen appears. It says 'Select which parts of the drive to create a backup of. Leave all parts selected if you are unsure'. In the 'Save Description' section the following appears: '**Drive 1, Part 1: (457.89GB EXT4) Linux Mint 18 Sonya (18.2)**', as well as '**Drive 1, Part 5: (7.87GB SWAP)**'. Both drives are already selected. Leave them selected. Click '**Next**'.
12. The '**Step 3**: Select Destination Drive' screen appears. It asks '**Where is the destination drive?**' There are two options: 'Connected directly to my computer' and 'Shared over a network'. Select the first choice. In the 'Select destination drive' window, the ext. HDD appears there as follows: '**Drive 3: (465.76GB NTFS)**'. Click '**Next**'.
13. The '**Step 4**: Select Destination Folder' screen appears. It says 'Click browse to select or create a folder on the destination drive where your new backup image will be saved'. It further says 'The folder a backup is saved in is usually a description of the computer. e.g. office 1 or zack-laptop'. There is a '/' in the narrow window. Click '**Browse**'.
14. The 'Select a Folder' box appears. It has four tabs at the top, two of which are named 'mnt' and 'backup'. There are four headings on the left side of the box named 'Search', 'Recently Used', root', and 'File System'. Any previous backups of the system that are on the external HDD will appear in their own folders within this window. Click '**Create Folder**' at the top right.
15. A message says 'Type name of new folder'. I typed '**20160710**', then **clicked once** on the left side of 20160710 to open its' folder (e.g. on the blue box, which is about ¼ inch or 6mm square) . This will enable the download to go into this folder. 2016.07.10 now appears to the right of the 'Backup' tab at the top. Click '**Save Here**'. We are returned to the 'Step 4: Select Destination Folder' screen, and '/2016.07.10' now appears in the narrow 'Browse' window.
16. Click '**Next**'. The '**Step 5**: Name Your Backup' screen appears. It says 'Provide a unique name for this backup image, such as the date. Today's date is automatically entered for you below'. It

then says 'You may only use letters, numbers, and dashes in your backup name'. As '20160710' already appeared there, we left it as it was. This represents the 10th July 2016. Alternatively we could have added '500GB' to identify which drive the image came from.

17. Click '**Next**'. The 'Creating Backup Image' screen appears. It says 'Backing up your system to the location you selected. This may take an hour or more depending on the speed of your computer and the amount of data'. A message soon says 'Reading bitmap for part 1 of 2'. Soon a narrow window appears listing the amount of progress. Below this window it says 'Part **1 of 2** (x%) x elapsed, x remaining' (e.g. x is time).
18. When the 'Part 1 of 2' backup completes, then the 'Part **2 of 2**' backup automatically commences in the same screen, which is a smaller backup. When this download finishes, a message in the narrow window says '100.00% Complete'. A tiny box shortly appears that says 'Backup image saved in x minutes'. In this case it was **30.2** minutes, and the size of the backed-up image to our ext. HDD was **23.7**GB. The free space on our computers 500GB 'C: Drive' was 431.4GB. Now click '**OK**', and when the tiny box disappears, then click '**Exit**'. The computer we backed up was a recent model, and the backed up image was made up of sixteen parts.
19. Now remove the DVD, and turn off the computer by clicking on the turn off button near the bottom right of the screen. The ext. HDD can shortly be turned off or removed, and the computer may now be restarted. To measure the size of the backed-up file, connect the ext. HDD, and then navigate to that file.

Restoring the backed up image to the same PC: (It can also be restored to another computer). We are about to restore the image to the same computer's 500GB HDD. This computer already has Linux Mint 18 cinnamon 64-bit on it. Before we can restore the image to it, we must first remove the computers HDD and format it completely to NTFS, using another computer. In this case, we will use Gparted to do that. Once finished, the HDD can be screwed back into the computer in readiness for the image to be installed to it. We will now show how to restore the previously made image (already stored on an external HDD), to the same computer. Such action are only necessary when the operating system on the computer's HDD becomes badly infected, which is very unlikely. Note: The image was restored to the same computer for the sake of data for this manual. Also, the HDD placed in the PC could have been larger if desired, but not smaller.

01. Start the computer.
02. Insert the active Redo ISO DVD in the computer's drive.
03. Cancel any box that appears.
04. Turn the computer off (fully).
05. Plug the external HDD that contains the backed up image into the computer's USB socket, then switch it on (if it has a switch).
06. Push the computers' start button, then quickly and often **press F12** on the keyboard until a response occurs. Sometimes it is best not to press F12 until the monitor flickers.
07. The 'Boot Device Menu' box appears. There are a number of options. Click '**Onboard or USB CD-ROM Drive**' to highlight it, then click '**Enter**' on the keyboard.
08. The 'Redo Backup & Recovery' screen appears. There are four choices. The first is 'Start Redo Backup', 'Safe Mode', 'Check CD for Defects', and 'Memory Test'. Click '**Start Redo Backup**' to highlight it, then click '**Enter**' on the Keyboard.
09. Within a few minutes or so the 'Welcome - Select an Option' screen appears. It says 'Easily create a backup image of your Computer, or completely restore from one. Click an option to begin'. There are two options, 'Backup' and 'Restore'. Click '**Restore**'.
10. The Restore '**Step 1:** Select Source Drive' screen appears. It asks 'Where is the source drive?' There are two choices: 'Connected directly to my computer', and 'Shared over a network'. Click a **dot** beside the first choice, which in this case is the external 500GB HDD, where the image was previously stored (not installed).
11. In the narrow window in the same screen, the following appears: '**Drive 1: (465.76GB**

NTFS)', which is the computer's 500GB 'C:Drive'. When the arrow at the end of the narrow window is clicked, the following also appears: '**Drive 3: (465.76GB NTFS)**', which is the 500GB external HDD. Select the second option, and then click '**Next**'.

12. The Restore '**Step 2:** Select Backup Image' screen appears. It says 'Click the box below to select the image file to restore from'. The box referred to is on the right side of the narrow window. Click once on the 'Box'.
13. The 'Select Backup Image' box appears. There are four tabs at the top, two of which are named 'mnt and 'backup'. There are four headings on the side of the box named 'Search', 'Recently Used', 'root', and 'File' System'. Navigate to the folder that contains the image, if it is not already in the large box. If any previous backups have been made, they will appear here also. **Double** click on the folder that contains the image we wish to restore from. In this case it is '**20160710**', (*which stands for the 10th July 2016, the date the image was created*). '20160710.backup' appears. Click '**Open**' at the bottom right of the 'Select Backup Image' box.
14. The 'Select Backup Image' box now disappears, and '**20160710.backup**' now appears in the narrow window. Click '**Next**'.
15. The 'Restore '**Step 3:** Select Destination Drive' screen appears. It says 'Select the destination drive you wish to overwrite and restore the selected image to'. '**Drive 1 (465.76GB): WDC WD5000AAKS-0 (465.76GB NTFS)**' appears in the narrow window, which is the computer's 500GB HDD. When we click the arrow attached to the narrow window, two other choices appear. They are: '**Drive 3 (465.76GB): 00AADS-00S9B0 (465.76GB NTFS)**', as well as '**Drive 19 (249.37MB): DRW-24D5MT**". Select the first of the three, then click '**Next**'.
16. The 'Restoring from Backup' screen appears. A small box appears that asks 'Are you sure you want to restore the backup to **/dev/sda**? Doing so will permanently overwrite the data on this drive!' Click '**Yes**'.
17. A message says 'Restoring your system from the image you selected. This may take an hour or more depending on the speed of the computer and the amount of data'. '% Complete' appears in the narrow window. Beneath the narrow window it says 'Part 1 of 2 (x %)'. '(x = Elapsed)', e.g. time elapsed. Then it says '(x Remaining)'.
18. Restoring the image took 10m21s for Part 1, and 7m41s for Part 2. When finished, a message in the narrow window says '**100% Complete**'. A small box appeared which said 'Backup restored *(in this case)* in 18.4 minutes' (similar to the above). Click '**OK**'. A message shortly appears near the top-right which says 'Backup Restored Successfully'.
19. When the small box disappears, click '**Exit**' near the bottom right.
20. The current screen disappears, and is replaced by the blue 'Redo Backup & Recovery' screen. Wait a minute before clicking the turnoff icon at the bottom right. This gives time for things to finalize.
21. A pop-up box appears. Click '**Shut Down - Power off the computer**'.
22. A message says 'Please remove the installation media and close the tray (if any) then press **ENTER**'. Once done, the computer turns off. Now turn off and remove the external HDD. When ready, restart the computer and see if all went well. There have been no problems to date.

Checking the results:
Before creating the image, we double-clicked the 'Computer' folder on the Desktop to open it, then right-clicked on the 'File System' folder, then clicked 'Properties' from the drop box. The results were as follows: 346,331 items (and 430 hidden) 27GB (some contents unreadable). After restoring the image I got: 346,312 items (and 430 hidden) 27GB (some contents unreadable). I consider this to be a perfect image restore.

Restoring the image to a computer's 1TB (Terabyte) HDD: (another test)
As the computer in this case had a 500GB HDD, and as an image was created of that drive, then if that image is restored to a larger drive, in this case a 1TB (1000GB) HDD, then the following occurs: After the image is restored to the computer, only 500 GB is available for the Operating

System and storage, even though the new HDD is 1TB in size. So where is the missing 500GB.

To find it, we double-clicked the 'Computer' folder on the Desktop, and an item appeared in that folder named '**ST1000DM003-1SB10C: 500 GB Volume**'. Your drive name will probably be different. This is the missing 500GB from the 1TB HDD. After double-clicking on that 500GB Volume, the missing free space appeared, as an unformatted partition.

Using GParted, that missing volume was formatted as 'ext4' for data storage. As it did not work for storage, it was then re-formatted as **ntfs**', which worked really well as a storage partition (do **not** install an operating system on that Volume). The fat-32 file system was not chosen, as the size of any single data file being stored cannot exceed 4GB in size. There has been no problems, as this ntfs partition is operating within Linux, and not beside it. Consequently, there are no conflicts between the operating system's ext4 file system and the partition's ntfs file system done this way.

Using the formatted ntfs partition: Whenever we restart the computer, this hidden partition will not re-appear until we double-click on 'Computer' (located on the Desktop), then double-click on the drive mentioned above (which is usually the second item inside the Computer folder). The previously formatted ntfs partition then opens, ready to store data into it when required. It's shortcut also appears on the Desktop, and will remain there until we restart the computer. Data can be installed either in a folder on the Linux Desktop, or in the ntfs partition mentioned above.

Can we save our data that is located either on the Desktop or in the partition, to an External HDD: Yes, it can all be transferred to an external HDD, and can be read by Linux or Windows operating systems.

Is the ntfs partition readable on a Windows OS, if placed in a docker: If our linux computer fails and we wish to save the data stored in the hidden ntfs partition on the computer's HDD, can we do so, by placing the same HDD in a docker connected to a Windows computer? The answer is **no**, as the hidden ntfs partition exists within an ext4 file system. We should all prepare for computer crashes by diligently saving our data to an external HDD.

OS's THAT MAY SUIT OLD 64-bit LAPTOPS AND DESKTOPS:
As the three operating Systems listed below are based on Ubuntu, then some of the information in this document may be applicable to them as well. The systems listed below are light to run. To obtain more information, go to their Web Sites.

Linux Mint 18.2 Sonya **Xfce** LTS **64-bit** (supported till 2021).
Lubuntu 17.04 desktop **amd64** LTS. (Released on 21.04.2016, and current for three years).
Xubuntu 16.04 desktop **amd64** LTS Xenial Xerus.

Note: 32-bit versions are also available, though their browsers may soon no longer be supported. Before installing a 64-bit version, make sure the computer can run it. To check if a computer is 64-bit compatible, see **IS MY COMPUTER'S PROCESSOR 32-BIT OR 64-BIT** near the beginning of this manual. Even if it is 64-bit compatible, it may still only be able to run the 32-bit system, due to the computer's older hardware components.

USING A LIVE CD FOR SAFER BROWSING. First download the free ISO of our choice (more on that below), then burn it to a CD, using, e.g. Brasero or Xfburn, etc. The resulting CD contains a tiny operating system to boot from, but we will be booting into RAM, and not the computer's operating system. Before turning on the computer to boot into RAM, **connect the internet cable, and if we have data that we will need on a USB stick, plug it in also**. Now that is done, start the computer, insert the Live CD, then turn off the computer (or, while the computer is turned off, push

a straightened paper-clip into the tiny hole on the front of the DVD Player to open it to insert the CD).

To boot into RAM, push the computer's start button, and then press **F12** quickly and often until a boot choice appears, and choose 'CD'. The computer will then boot into RAM. We can then search the Web safely. This has a variety of uses, some of which are online purchases, checking the Bank account, transferring between accounts, paying bills, etc. Navigating in RAM will leave no traces on the computer as long as we do not click 'Save', and no traces will be detected while using it. This is because the computer's own operating system is not active while running in RAM. This leaves no easy way for others to capture our keystrokes, etc., to steal our data and Passwords.

There are at least two good choices of **ISO**'s. **Slacko Puppy 6.3.2 eufi 32-bit** (released 23.06.2016), as well as **Slacko Puppy 6.3.2 eufi 64-bit** (released 23.06.2016). They can both be run on computers that have a Hard Drive, **or that have no Hard Drive**. This means that if the HDD was removed from a p/c for some reason, e.g. it may have been faulty, but as long as the RAM etc. is OK, then the computer may still be able to to run on the stick of RAM inside it.

We tested this by first unplugging the Hard Drive on our Desktop P/C, and found we could still boot-up into its' RAM and surf the net, using either of the above Slacko Puppy live ISO CD's inserted in the p/c's CD Drive. It works the same with or without the internal Hard Drive connected, though some of the other Puppy ISO's require a Hard Drive connected. (PC means 'Personal Computer', but as few p/c's are free of spyware, then they are no longer personal, but are instead shared. They could then be called SC's, or Shared Computers). When we run a computer in RAM only, it is no longer shared.

The above ISO's can be downloaded free on the Internet, which can then be burnt to CD's as Active ISO's. Before proceeding, read the data and advice relating to it.

We should check the SHA256 of the downloaded ISO's, as well as the minimun system requirements to run them as listed below. To check the downloaded ISO's for accuracy, copy them to either the Desktop or the Home folder, right-click on them, and then click on 'Check SHA256' from the drop-box. Shortly a small 'Information' box appears, which contains the the SHA256. It is a mixture of 64-letters and numbers.

The minimum recommended system requirements for the **32-bit** ISO is as follows:
slacko-6.3.2-uefi.iso requires at least a 900MHz processor (P3 or AMD K7), and 512MB RAM. A hard drive is not required.

The minimum recommended system requirements for the **64-bit** ISO is as follows:
slacko64-6.3.2-uefi.iso requires at least a 1.6GHz processor (IA64 or AMD64), and 1GB RAM. A hard drive is not required.

They can both be downloaded from: **slacko.eezy.xyz/**. Remember that support for 32-bit Web Browsers may soon discontinue.